



education

2011



Hands-On Science, Technology,
Engineering, and Math



Welcome to the 2011 edition of the LEGO® Education catalog.

At LEGO Education, we understand that students need to master science, technology, engineering, and math (STEM) skills, and at the same time we need to provide opportunities for them to integrate their STEM knowledge with critical thinking, teamwork, and creative problem-solving skills that help them form the necessary foundation for life in our ever-changing world. This integration forms the vision that drives LEGO Education's continuum of products, software, activities, and teacher resources.

Throughout the following pages you'll find the continuum in robotics, simple machines, renewable energy, and more.

New this year to our popular robotics program is the *Green City Challenge Set and Activity Pack* for LEGO MINDSTORMS® Education. These innovative new activities replicate the excitement of FIRST® LEGO League, integrating this engagement into the classroom in the form of a step-by-step introduction to LEGO MINDSTORMS® Education.

Several other new items are available this year to further enrich your STEM classroom. A few examples are the new LEGO Education WeDo™ Robotics Extension Activity Packs, which offer additional activities for elementary students; new sensors from HiTechnic that add great possibilities to existing robotics programs; and the new TETRIX® Tank Tread Kit from Pitsco that opens new possibilities for MINDSTORMS robots in classrooms and competitions.

Also, check out LEGO SERIOUS PLAY™. If you're reading this letter, you're already a believer in student-directed, hands-on learning, and LEGO SERIOUS PLAY professional development, sets, and activities provide a framework for changing your classroom into an even more dynamic environment where students take an active role in their own learning.

And finally, make the most out of your investment with workshops from LEGO Education Academy. These hands-on workshops can take place at your school and are led by certified LEGO Education facilitators. Rest assured you'll get the best service in the industry.

The opportunity to build the future with LEGO Education is only a few pages away. Be LEGO Smart! We know your students will be!

Sincerely,



Dr. Harvey Dean
CEO



Activities with Natural Flow

Activity Packs from LEGO® Education are developed by experienced educators and have a natural flow that engages and motivates students. We call it the 4C approach. It consists of four phases: Connect, Construct, Contemplate, and Continue.

4Cs

Connect

It is important to capture students' interest in order to have a positive and motivating learning environment. LEGO Education activities always begin with an engaging challenge introduced through real-life video clips, photos, stories, animations, and so forth that students can relate to and find compelling.



Construct

Students work in teams to solve an open-ended building task related to the challenge. They make their own solutions and plan, build, and test their models or software program.



Contemplate

In this phase, students think about what they have just constructed and achieved. They discuss the project at hand, reflect on and adapt their ideas, and teachers can encourage this process by asking questions.



Continue

Extension ideas are provided that present a new challenge within the same theme. Students are encouraged to change or add features to their models, thereby leading them to a new Connect phase. This allows them to enter a positive learning spiral, in which they take on increasingly difficult challenges.





education

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Level Key

Early Learning – Ages 5-8
Intermediate – Ages 9-11
Middle School – Ages 12-14
High School – Ages 14-18



**CHOKING
HAZARD!**

Products with this warning contain small parts, small balls, or marbles that could create a potential choking hazard. Not suitable for children under three years of age.



Please recycle.

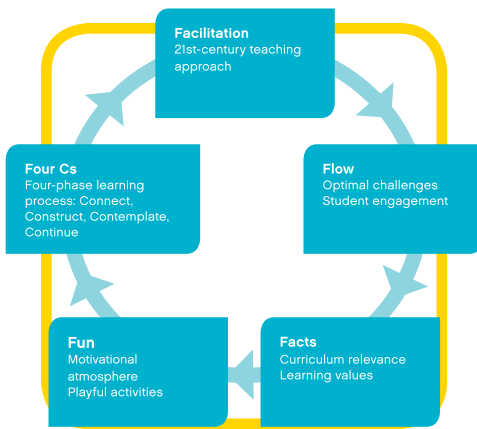


Get the Most out of Your Resources!

Facilitation
Hands-on
Creative
Techniques
Curriculum
Motivation

LEGO® Education Academy

At LEGO® Education, we are committed to enabling educators to effectively use our engaging and motivating resources to create rich, hands-on learning experiences for their students. LEGO Education Academy offers professional development programs for teachers who want to get the most out of their LEGO Education resources. Experience a motivating approach to teaching. Learn to facilitate rather than direct classroom learning and find out how to encourage your students to take a more active role in their learning.



Learning Theory



Hands-on



Knowledge Sharing



Workshops Offered Include:

- Early Simple Machines
- Machines and Mechanisms
- LEGO® Education WeDo™ Robotics
- LEGO MINDSTORMS® NXT Basic
- LEGO MINDSTORMS NXT Advanced with Datalogging
- LEGO MINDSTORMS NXT with TETRIX®
- Competition Training For Jr.FLL, FLL, and FTC

Visit www.LEGOeducation.us for complete descriptions of all workshops listed above.

What to expect

All Academy facilitators . . .

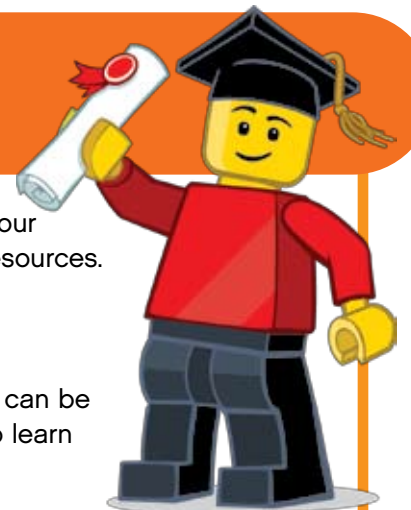
are dedicated to a hands-on approach to learning and have completed an intensive training course where only the best receive official certification by LEGO Education.

After selecting a workshop, a LEGO® Education-certified facilitator will come to your location and help up to 20 teachers get the most out of their LEGO Education resources.

991550 Professional Development for 10 teachers—\$1,800*
(\$100 more for each additional teacher up to 20 teachers)

Don't see what you are looking for? All workshop agendas are customizable and can be tailored to fit individual customer needs. Call your local educational consultant to learn more; see pages 104-105 for listing.

*Price includes travel for the LEGO Education-certified facilitator.





Professional
Development
from LEGO®
Education

A LEGO Way to Teach

21st-century skills
Facilitation
Communication
Critical-thinking
Methodology
Problem-solving
Student engagement

LEGO® SERIOUS PLAY™

From language development to critical thinking, LEGO® SERIOUS PLAY™ professional development workshops provide a teaching method and classroom tool for schools that have put creativity back on the agenda and are serious about developing 21st-century learners. SERIOUS PLAY is a method that facilitates learning for K-12 students. During the LEGO SERIOUS PLAY process, students use bricks from the specially-formulated Reflections Kit to build LEGO models that serve as metaphors for curriculum concepts learned and then share their metaphor with a group, helping cement these concepts in their minds and deepen understanding while improving communication and critical thinking skills.



I used to stand at the front of the class and ask my students what they understood about democracy. Now I get the LEGO kits out and ask them to build a representation of democracy. Not only does every student now contribute to the discussion, but what they have to say is simply better.”

Tina Roland Berg, 7th and 8th grade language teacher

Teach the LEGO® SERIOUS PLAY™ Way.

LEGO® SERIOUS PLAY™ is for teachers who want students to take a more active role in their own learning. Being a good facilitator is the key to making that happen. Our professional development workshops are designed not only to improve facilitation skills but also to heighten the understanding of students' individual strengths and needs.



Each One-day Professional Development Workshop Covers:

Learning theory

- Discover how a process of reflection and dialogue helps cultivate a positive learning environment and achieve learning targets across the board.
- Learn how to awaken students' interest in given subjects.

Hands on

- Build your own metaphors and share your insights and experiences with participants.
- Experience the common language of SERIOUS PLAY, the bricks. Examine how effective facilitation combined with LEGO bricks enables everyone to be treated as equals and all opinions to be heard.

Tools for planning

- Explore ways to apply the method to your curricula programs.
- Practice planning your own LEGO SERIOUS PLAY sessions.

Package options

Each package includes six hours of instruction for up to 10 participants.

Professional Development Starter Package

This offering includes one day of hands-on theory, practice, and training presented by a LEGO Education-certified facilitator. Each participant also receives a training course manual and one LEGO SERIOUS PLAY *Reflections Kit*.
NX991676—\$2,500

Professional Development Shared Package

This offering includes one day of hands-on theory, practice, and training presented by a LEGO Education-certified facilitator. Each participant also receives a training course manual and 10 LEGO SERIOUS PLAY *Reflections Kits*.
NX991678—\$6,200

LEGO SERIOUS PLAY is also offered as a two-day workshop. Call your local educational consultant to learn more.





Explore Robotics!

Mechanisms
Robotics
Explore
Science
Math
Language
Build Create

LEGO® Education WeDo™ Robotics

Bring creativity to your classroom with LEGO® Education WeDo™ Robotics! Designed for the elementary learner, WeDo Robotics is a cross-curricular set and series of theme-based activities. The activities cover content in the areas of math, science, technology, and engineering, as well as language arts and literacy. Your students will build and program their robotic models to write stories, solve problems, and create innovative projects.





Sets



Software



Activities



Learning Targets

Science

- Working with simple machines: gears, levers, and pulleys
- Transmission of motion

Technology

- Programming
- Using software media
- Designing and creating a working model

Mathematics

- Measuring time and distance
- Adding, subtracting, multiplying, dividing, estimating, and randomness
- Using variables

Language and Literacy

- Narrative and journalistic writing
- Storytelling, explaining, interviewing, and interpreting

SAMPLE ACTIVITY

Into the Wild

Objective: Students will create a profile about a particular species of primate and use the WeDo™ software to demonstrate an appropriate habitat based on the research conducted for the profile.

Students will:

- Research and describe a particular primate in relation to its habitat.
- Define and understand key environmental terminology.
- Demonstrate a thorough understanding of the features of a biological habitat.

Extensions:

- Build the shape of the country where the particular species of primate lives out of LEGO® bricks.
- Host a scavenger hunt for books or information to further develop research and library skills.
- Create a 3-D world map marking where each student's primates live and add geographical and environmental features.





Professional Development Available. See pages 2-3.



LEGO® Education WeDo™ Robotics Construction Set

The LEGO® Education **WeDo™ Robotics Construction Set** is an easy-to-use set that introduces young students to robotics when combined with the LEGO Education **WeDo Robotics Software v.1.2 and Activity Pack** (900097). Students will be able to build LEGO models featuring working motors and sensors; program their models; and explore a series of cross-curricular, theme-based activities while developing their skills in science, technology, engineering, and mathematics, as well as language and literacy. The construction set comes with printed building instructions for 12 models and contains more than 150 elements including a motor, tilt sensor, motion sensor, and LEGO USB Hub.

LEGO Education **WeDo Robotics Software v.1.2 and Activity Pack** are sold separately. Ages 7+.

NX979580—\$129.95

NX991570 2-Pack—\$239.95 Save \$19

NX991480 4-Pack—\$479.95 Save \$39

NX991571 6-Pack—\$719.95 Save \$59

NX991481 8-Pack—\$959.95 Save \$79

NX991572 10-Pack—\$1,199.95 Save \$99

NX991482 12-Pack—\$1,439.95 Save \$119





LEGO® Education WeDo™ Robotics Software SYSTEM REQUIREMENTS

Minimum Requirement Specifications for PC:

- Intel® Pentium® processor or compatible, 800 MHz minimum
- Windows XP, Vista, or Windows 7 with latest Service Pack
- 512 MB of RAM minimum
- 150 MB of available hard-disk space
- DVD drive

Minimum Requirement Specifications for Mac:

- Apple MacOS X v.10.5 or 10.6
- Intel processor
- 512 MB of RAM minimum
- 150 MB of available hard-disk space
- DVD drive

Teacher's Guide included as PDF.



Get young students excited about science and engineering with Jr. FIRST LEGO league. Learn more at usfirst.org.

LEGO® Education WeDo™ Robotics Software v.1.2 and Activity Pack

Easy-to-use software and 12 theme-based activities for the WeDo™ Construction Set in one package! The drag-and-drop software v.1.2, powered by LabVIEW™, is icon based, provides an intuitive programming environment, includes a programming block and support for the Power Functions Light (778870), and features a digital Getting Started Guide with building tips and programming examples. Activities are divided into four themes: Amazing Mechanisms, Wild Animals, Play Soccer, and Adventure Stories and provide up to 24 hours of instruction and project-based learning. Teacher notes, glossary, and building instructions included. When the software and Activity Pack are used with the WeDo Construction Set, students will:

- Use software to program, design, and create a working model.
- Use software to acquire information.
- Use feedback to adjust a programming system output.
- Work with simple machines: gears, levers, pulleys, and transmission of motion.

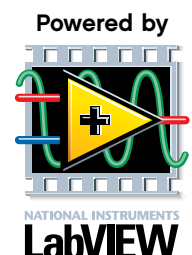
NX900097—\$89.95



LEGO® Education WeDo™ Robotics Software v.1.2 and Activity Pack and Site License

The site license allows for the installation of the LEGO® Education WeDo™ Robotics Software v.1.2 and Activity Pack on all the computers at a single school or institution.

NX991750—\$299.95





A
\$2,059.15
value!



Professional
Development
Available.
See pages 2-3.



LEGO® Education WeDo™ Robotics – Getting Started II Package

This Getting Started package has everything you need to introduce a class of 24 students working in pairs to WeDo™ robotics. This package includes:

- 12 LEGO® Education WeDo™ Robotics Construction Sets
- LEGO® Education WeDo™ Robotics Software v.1.2 and Activity Pack and Site License
- Amazing Mechanisms WeDo™ Extension Activity Pack
- Play Soccer WeDo™ Extension Activity Pack
- Wild Animals WeDo™ Extension Activity Pack
- Adventure Stories WeDo™ Extension Activity Pack

**NX991838 LEGO® Education WeDo Robotics –
Getting Started II Package—\$1,906.95**



**NX991839 LEGO® Education WeDo™ Robotics –
Getting Started II Package with Professional
Development—\$3,706.95**

Ages 7+



LEGO® Education WeDo™ Robotics Combo

Includes WeDo™ Robotics Construction Set and WeDo Robotics Software v.1.2 and Activity Pack for one computer.

NX991752—\$189.95 Save \$29



LEGO® Education WeDo™ Robotics Center Pack

The LEGO® Education WeDo™ Robotics Center Pack has everything you need to place a robotics center in your classroom. The WeDo Center Pack includes the WeDo Robotics Software v.1.2 and Activity Pack with a special center license for four computers, plus four WeDo Robotics Construction Sets.

NX991483—\$649.95





LEGO® Education WeDo™ Robotics Extension Activity Packs

LEGO® Education WeDo™ Robotics Extension Activity Packs serve as an addition to the original WeDo Activity Pack to aid elementary school educators in creating more engaging learning experiences in science, literacy, math, and social studies. Using the LEGO Education WeDo hardware and software, in combination with these activities, educators can easily create rich, cross-curricular lessons to inspire critical thinking, problem solving, and creativity. These activity packs provide detailed lesson plans, resources, and extension activities delivered in a printed teacher guide. A CD-ROM including printable versions all of the lessons is also included. These activity packs are designed for use with the WeDo Construction Set, Software, and Activity Pack and include optional extension activities that are enhanced by using the Sceneries Set (779385).

Amazing Mechanisms
WeDo™ Extension
Activity Pack

LEGO® Education WeDo™ Robotics Extension Activities

Each themed activity pack includes 12 new activities covering over 36 hours of classroom time in the areas of math, science, literacy, and social studies. Included with each activity pack is a learning grid mapping activities to key standards and learning objectives. All activities include a Lesson-at-a-Glance overview, a teacher's guide with detailed lesson plans, worksheet(s), an assessment rubric, and tracking sheets for organization and program planning.

Additional connections to visual arts, dramatic arts, music, physical education, and technology are also included throughout the lessons.

Each activity pack is delivered in a tabbed, 3-ring binder so pages can easily be found, removed, and replaced for copying. Also included is a CD containing a printable PDF of the activity pack.

NX991835 Wild Animals WeDo™ Extension Activity Pack—\$49.95

NX991836 Adventure Stories WeDo™ Extension Activity Pack—\$49.95

NX991730 Amazing Mechanisms WeDo™ Extension Activity Pack—\$49.95

NX991731 Play Soccer WeDo™ Extension Activity Pack—\$49.95

Play Soccer WeDo™
Extension Activity Pack

Wild Animals WeDo™
Extension Activity Pack
(Available in February)

Adventure Stories WeDo™
Extension Activity Pack
(Available in February)

LEGO® Education WeDo™ Robotics Extension Activities Bundle Pack

This package is a great value and includes all four LEGO® Education WeDo™ Robotics Extension Activity Packs, totaling over 144 hours of instruction across math, science, literacy, and social studies. BONUS: An interactive CD-ROM with a new series of instructional WeDo programming videos to help your students master the basics of the WeDo programming software. Also on the CD are PDFs of each lesson broken down by WeDo model with printable worksheets, tracking sheets, assessment rubrics, and more.

NX991837—\$179.95



education

WeDo™ Robotics



1,207

Sceneries Set

Give your students even more opportunities to design, build, and program exciting models for your LEGO® Education WeDo™ Robotics Construction Sets with the Sceneries Set. Includes basic bricks in a variety of colors and a number of special elements.

Ages 4+.

NX779385—\$81.95

NX991720 2-Pack—\$160.95 Save \$2

NX991721 4-Pack—\$321.95 Save \$5

NX991722 6-Pack—\$479.95 Save \$11

NX991723 8-Pack—\$635.95 Save \$19

NX991724 10-Pack—\$790.95 Save \$28

NX991725 12-Pack—\$944.95 Save \$38

LEGO® USB Hub

The two-port hub controls motors and sensors, transmits power and data to and from the computer, and is automatically detected by the WeDo™ Software when connected to the computer.

Ages 7+.

NX979581—\$44.95



Power Functions M-Motor

Use the Power Functions M-Motor with the new power function connector to bring your LEGO® models to life. The Power Functions M-Motor is compatible with both LEGO building systems and can be used with the LEGO Education WeDo™ Robotics Construction Set and the Simple and Motorized Mechanisms Set.

NX978883—\$7.95

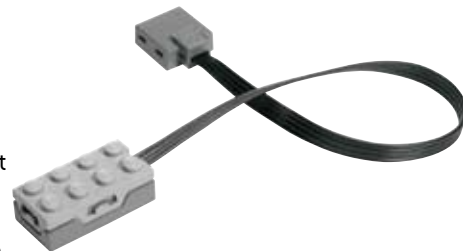


WeDo™ Robotics Tilt Sensor

Detects six different positions and is automatically detected by the WeDo™ Software.

Ages 7+.

NX979584—\$19.95

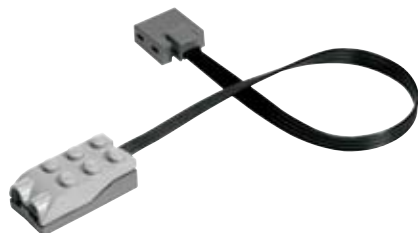


WeDo™ Robotics Motion Sensor

Detects objects within a 15 cm range and is automatically detected by the WeDo™ Software.

Ages 7+.

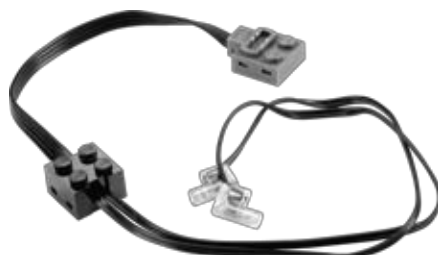
NX979583—\$19.95



Power Functions Light

Is supported by LEGO® Education WeDo™ Robotics Software v1.2 and Activity Pack. Now you can add bright LED lights to your models to create glowing eyes, illuminated headlights, and much more! Ages 7+.

NX778870—\$6.95



See page 1 for more information.

LEGO, the LEGO logo, DUPLO, WEDO, MINDSTORMS, and the MINDSTORMS logo are trademarks of the LEGO Group. ©2011 The LEGO Group.

LEGO® Education and Intel® partnered to ensure that the **WeDo™** Robotics programming software functions on the small Intel-powered *Clamshell* and *Convertible* classmate PCs. Because of this collaboration, elementary schools everywhere can pair cost-effective computers with LEGO Education sets and curriculum, giving every student access to the latest technology and engaging learning tools.



Intel® Convertible PC

Intel®-powered *Convertible* classmate PCs include practical, education-oriented features that improve the learning experience for students, parents, teachers, and schools.

- Compatible with LEGO® MINDSTORMS® Education NXT Software and **WeDo™** Robotics Software and Activity Pack
- Dual mode of use for students – tablet mode and traditional laptop mode – adjusts with changing needs in the classroom.
- When open like a traditional laptop, the screen swivels 180 degrees for sharing with peers and teachers.
- Touch screen and advanced palm-resting technology promote new models of interaction for children.
- Enables writing or drawing directly on the screen in a natural way
- Built-in camera rotates 180 degrees to enable students to interact in a new way.
- Built-in speakers and microphone
- Carrying handle, lightweight, and compact size to support micro-mobility inside the classroom
- Durable construction and rugged outer case
- Water-resistant keyboard, touch pad, and 10.1" LCD touch screen
- Education-specific features and touch-optimized software

NX991747 Intel® Convertible PC with Windows 7 Starter—\$539

NX991748 Intel® Convertible PC with Windows 7 Home—\$599

NX991696 Intel® Convertible PC with Windows 7 Pro—\$619

Intel® Clamshell PC does not support LEGO® MINDSTORMS® software.

Intel® Clamshell PC

Intel®-powered *Clamshell* classmate PCs include practical, education-oriented features that improve the learning experience for students, parents, teachers, and schools.

- Compatible with LEGO® Education **WeDo™** Robotics Software and Activity Pack
- Lightweight and compact, perfect for child-size hands
- Durable drop-proof construction and rugged outer case
- Carrying handle
- Water-resistant keyboard, touch pad, and 10.1" LCD touch screen
- Education-specific features and software
- Built-in camera, speakers, and microphone

NX991743 Intel® Clamshell PC with Windows 7 Starter—\$469

NX991744 Intel® Clamshell PC with Windows 7 Home—\$519

NX991694 Intel® Clamshell PC with Windows 7 Pro—\$549

For quantities over 100 call 1-800-362-4308. Please allow 2-4 weeks for delivery. System requirements online.



Hands-on Robotics Laboratory!

Robotics
Science
Math
Technology
Programming
Community
Problem-solving
Construction

LEGO® MINDSTORMS® Education

LEGO® MINDSTORMS® Education sets, software, and activities are powerful tools that convert your classroom into a hands-on robotics laboratory. Your students will model real-life mechanisms and use creativity, logic, and problem-solving skills to meet challenges while learning necessary science, technology, engineering, and math concepts.





Sets



Software



Activities



Learning Targets

Science

- Control speed and power using a motor
- Work with gear ratios
- Use data from specialized sensors such as rotation, sound, light, ultrasonic, and touch

Technology

- Program and control input and output devices
- Use wireless communication

Engineering

- Brainstorm solutions
- Choose one, build it, test it, evaluate it, and revise it

Math

- Use data involving distance, time, turning angle, degrees of rotation, sound volume, reflected and ambient light, and gear ratios
- Convert between decimals and fractions and between metric and customary units
- Practice applied math

SAMPLE ACTIVITY

MINDSTORMS® Automated Mining

Objective: Students will learn how to take and organize measurements to represent a basic two-dimensional floor plan of a mine shaft.

Students will:

- Use a ruler to create a graph of an enclosed area.
- Use a sensor to create a graph of an enclosed area.
- Graph points using polar coordinates.

Extensions:

- Add obstacles and re-graph to see the difference of the layout of the mine.
- Program your robot to retrieve an item (LEGO® brick, pencil, or other small object) from the mine.
- Set up a maze using LEGO® bricks and then graph the results.





education

LEGO® MINDSTORMS® Education



New
Eco-Friendly battery!



LEGO® MINDSTORMS® Education NXT Base Set

This essential core set serves as the base for endless NXT robotic creations. The set includes 437 elements, featuring:

- *NXT Intelligent Brick*
- New rechargeable lithium DC battery and charger
- 3 servo motors
- 1 each: light sensor, sound sensor, ultrasonic sensor
- 2 touch sensors
- 3 rotation sensors built into the motors
- 3 converter cables (for using legacy sensors and motors with the *NXT Intelligent Brick*)
- 7 connector cables (one .2M, two .5M, four .35M)
- 3 lamps
- USB cable
- Hundreds of Technic building elements
- Plastic storage bin with sorting trays

LEGO® Education NXT Software sold

separately. Ages 8+.

NX979797—\$279.95

NX991413 2-Pack—\$551.95 Save \$7

NX991412 4-Pack—\$1,097.95 Save \$21

NX991411 6-Pack—\$1,637.95 Save \$41

NX991410 8-Pack—\$2,172.95 Save \$66

NX991409 10-Pack—\$2,701.95 Save \$97

NX991408 12-Pack—\$3,225.95 Save \$133



See pages 30-31 For additional package options.

Online Building Instructions

Using the new LEGO® MINDSTORMS® Education Resource Set (979695) with the LEGO MINDSTORMS Education NXT Base Set lets your students take LEGO MINDSTORMS Education robots to the next level and add even more innovation to learning. Download building instructions and programming examples for nine cool models at www.LEGOeducation.us/979685buildinginstructions.

Examples:

Grand Four-belt Rover: It detects and climbs obstacles.

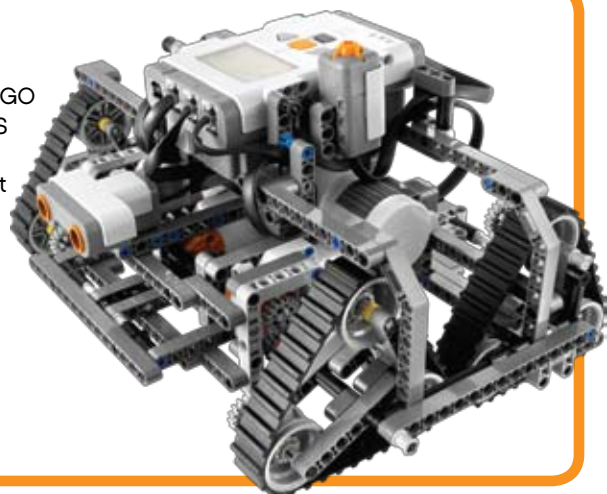
Belt-driven Color Sorter: Get your colors in order.

Robot Arm: Helps you pick things up.

Humanoid: Watch it walk and move like a person.

Scorpion: Watch out for its sting!

Intelligent Car: Steering and differential gives it unique driving capabilities.





LEGO® MINDSTORMS® Education NXT Software 2.1

This powerful, easy-to-use software for programming and data logging is icon based and incorporates Robot Educator, a step-by-step guide with 46 tutorials, from beginner to advanced levels. Data-logging functionalities, including a graph viewer, make it easy to collect and analyze data from sensors. The software incorporates a comprehensive digital user manual. The software is Mac OS X, Windows XP, Vista, and 7 compatible.

NX900080—\$79.95

LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License

The site license allows for the installation of the software on all computers at a single school or institution.

NX991515—\$339.95



Upgrading from 1.0, 1.1, or 2.0?

If you own a single copy of a previous version of LEGO® MINDSTORMS® Education NXT Software, you must buy a new copy. If you own a site license, simply purchase the single copy and upgrade your entire building.

LEGO® MINDSTORMS® Education Resource Set

This updated set features 817 elements that enable you to build and program MINDSTORMS® robots with even more functions than ever before. Includes plenty of special elements such as belts, unique connectors, a worm gear, and structural elements, as well as other LEGO® elements such as beams, axles, and connectors. It is the ideal supplement to your LEGO MINDSTORMS Education Base Set for classroom, after-school, or robotic competition use! Download free building instructions and programming examples for several great robots on LEGOeducation.us. Ages 8+.

NX979695—\$99.95

NX991732 2-Pack—\$196.95 Save \$2

NX991733 4-Pack—\$391.95 Save \$7

NX991734 6-Pack—\$584.95 Save \$14

NX991735 8-Pack—\$775.95 Save \$23

NX991736 10-Pack—\$964.95 Save \$34

NX991737 12-Pack—\$1,151.95 Save \$47



This robot can be built with a combination of parts from the 979797 and 979695 sets.

Colors and decorative designs may vary.

LEGO® MINDSTORMS® Education NXT 2.1 Software SYSTEM REQUIREMENTS

Microsoft Windows®:

- Windows operating systems XP, Vista, or Windows 7 with the latest service packs
- Intel® Pentium® processors or compatible, 1 GHz or better recommended
- CD-ROM drive
- Minimum 512 MB RAM
- At least 700 MB of available hard disk space
- XGA display (1024 x 768)
- 1 available USB port

Apple Macintosh®:

- Mac operating system 10.4, 10.5, or 10.6 with the latest service packs
- Power PC® G3, G4, or G5 processors 600 MHz minimum (1.3 GHz or better recommended)
- Or Mac systems with the Intel® Processor®
- A DVD drive
- Minimum 512 MB RAM
- At least 700 MB of available hard disk space
- XGA display (1024 x 768)
- 1 available USB port



Excite your students' minds with *FIRST* LEGO League! Learn more at usfirst.org.



An Easy Way to Introduce Robotics into the Classroom!



Green City Challenge Combo Pack

The *Green City Challenge Combo Pack* includes both the *Green City Challenge Set* and *Activity Pack* and is ideal as a step-by-step introduction to robotics in the classroom or as preparation for robotics competitions. The *Green City Challenge Set* contains three training mats, a challenge mat, and more than 1,300 elements for building the challenge models, such as a power plant, wind turbine, and dam. The training mats provide a field where students can test and practice their programming skills. The challenge mat offers a real-life setting for solving different missions so students can apply the skills acquired through the training.

The *Green City Challenge Activity Pack* includes seven easy-to-follow training activities, each supported by student worksheets, which guide the students from simple to more advanced programming. Students are then challenged to apply their programming and problem-solving skills by making their robots solve real-world engineering challenges related to renewable energy. Comprehensive teacher notes provide everything needed for easy implementation, including programming examples, building instructions, mission and rules, extension ideas, and more. Also includes a project that can be used for further research into the challenge topic of renewable energy.

The *Green City Challenge Set* and *Activity Pack* were designed for use with the LEGO® MINDSTORMS® Education NXT Base Set and Software (sold separately). Ages 8+.

NX999594—\$319.95

NX979594 Green City Challenge Set—\$174.95

NX209594 Green City Challenge Activity Pack—\$154.95

**A
\$4,009.25
value!**

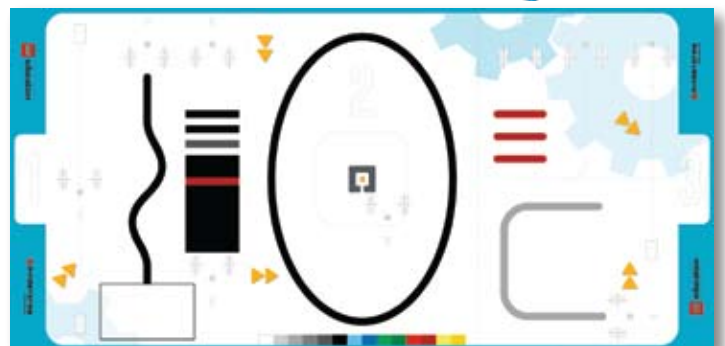
Green City Challenge Getting Started I Package

This Getting Started package comes complete with everything you need to introduce robotics into the classroom. This package is designed for 24 students working in pairs and includes:

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- Green City Challenge Set
- Green City Challenge Activity Pack

**NX991833 Green City Challenge
Getting Started I Package —\$3,868.95**

Ages 8+





This model is built with a combination of parts from the 979797 LEGO® MINDSTORMS® Education NXT Base Set, 979695 LEGO MINDSTORMS Resource Set, and 779688 Renewable Energy Add-On Set.



Renewable Energy Add-On Set

The *Renewable Energy Add-On Set* enables your students to explore energy concepts with LEGO® MINDSTORMS® Education. They experiment using energy from their own bodies and the three main energy sources – solar, wind, and water – to generate, store, and use power. When connected to the NXT Brick, the unique elements of the *Renewable Energy Add-On Set* (solar panel, generator, and LEGO Energy Meter) work as sensors. Ages 8+.

NX779688—\$99.95

NX991714 2-Pack—\$196.95 Save \$2

NX991715 4-Pack—\$391.95 Save \$7

NX991716 6-Pack—\$584.95 Save \$14

NX991717 8-Pack—\$775.95 Save \$23

NX991718 10-Pack—\$964.95 Save \$34

NX991719 12-Pack—\$1,151.95 Save \$47

Energy Display



This element displays energy storage level in joules and input and output in volts, watts, and amps. Combine with 979669 *Energy Storage* to form the LEGO® Energy Meter. Ages 8+.

NX979668—\$49.95



Energy Storage



This NiMH battery with connector is designed to be combined with the 979668 *Energy Display*. When combined, the two elements form the LEGO® Energy Meter. Storage capacity: 150 mAh. Ages 8+.

NX979669—\$16.95



Solar Panel



The LEGO® Solar Panel provides sufficient power to operate the LEGO Energy Meter and motors. It delivers 5V, 4mA in direct light from a 60W incandescent bulb positioned 25 cm from the solar panel (2000 lux). Ages 8+.

NX979667—\$39.95



MINDSTORMS® Energy Parts Pack



The MINDSTORMS® Education energy models require parts not included in the LEGO® MINDSTORMS Education Base Set and Renewable Energy Add-On Set. This pack includes the extra parts necessary to build the MINDSTORMS Wind Turbine and Solar Station. **Note:** These parts are also included in the LEGO MINDSTORMS Education Resource Set. Ages 8+.

NX991751—\$12





How do I use sensors and LEGO® MINDSTORMS® Education NXT Software in my classroom?

Here are a few examples of projects that use LEGO® MINDSTORMS® Education NXT Software and sensors for sensing and controlling. While these projects may give you some ideas, real-life applications and your students' imaginations will provide you with a wealth of additional ideas!



Light Sensor

- Use a strobe light to make your robot "dance."
- Use the light sensor as a magic wand to control your robot's actions.
- Use a light sensor on your robot to remind you to turn off a light if it has been on too long.

NXT Light Sensor

The *NXT Light Sensor* is sensitive and precise. It reads light intensity from the surrounding environment, as well as the reflection from the infrared transmitter. The LED light source can be turned off for an accurate ambient light reading. Ages 8+.

NX979844—\$17.95

NX991800 4-Pack—\$70.95

NX991801 8-Pack—\$139.95

NX991802 12-Pack—\$206.95



Sound Sensor

- Control your robot by clapping your hands and whistling; for example, clap three times to make it drive forward and whistle to make it stop.
- Create a dog-bot that will perform tricks at your command.
- Assemble a noise meter for your classroom. When the noise level gets too high, a light will blink.

NXT Sound Sensor

This sophisticated sensor provides stimulus for directing a robot's actions. The sensor measures dB and dBA and recognizes sound patterns and tones. Ages 8+.

NX979845—\$26.95

NX991803 4-Pack—\$105.95

NX991804 8-Pack—\$209.95

NX991805 12-Pack—\$310.95



Ultrasonic Sensor

- Make an ultrasonic soccer goal so that each time a ball is rolled into the goal, the *NXT* will display the score.
- Make an ultrasonic door alarm; for example, if someone approaches your door, the robot will sound the alarm.
- Play a game of cat and mouse with two *NXT* robots; when one of the robots senses the other, it will change direction to escape from the other robot.

NXT Ultrasonic Sensor

This exciting sensor uses ultrasonic measurements to "see" its surroundings. The sensor works by sending out a signal and then waiting for that signal to return. By measuring the time elapsed during the signal's journey, the sensor can determine the distance from the object. Ages 8+.

NX979846—\$31.95

NX991806 4-Pack—\$125.95

NX991807 8-Pack—\$248.95

NX991808 12-Pack—\$368.95

Temperature Sensor

- Data log the temperature variances of the school playground.
- Use the temperature sensor with the *Renewable Energy Set* to record the change in temperature of the solar panel on a sunny day.
- Use the temperature sensor to determine the temperature of water when ice is added.

NXT Temperature Sensor

This digital temperature sensor can be calibrated to measure both Celsius and Fahrenheit using the *NXT Intelligent Brick* and the LEGO® MINDSTORMS® Education Software v.2.0 or higher. Ages 8+.

NX979749—\$39.95

NX991809 4-Pack—\$156.95

NX991810 8-Pack—\$310.95

NX991811 12-Pack—\$460.95



Touch Sensor

- Use a touch sensor as a counter; when students complete a task, they touch the sensor, and when all students have touched the sensor, an alarm sounds.
- Use a touch sensor to play a football-type game; when the ball rolls into the sensor, it triggers the robot to kick.
- Use two touch sensors as a remote control for your robot.
- Create a gumball dispenser by using the touch sensor to dispense the gumballs.

NXT Touch Sensor

This touch sensor is very basic and is either on or off, depending on the position of the push button. The *NXT Touch Sensor* features a hole for an axle in the push button, giving users more options for incorporating the sensor into their designs. Ages 8+.

NX979843—\$17.95

NX991812 4-Pack—\$70.95

NX991813 8-Pack—\$139.95

NX991814 12-Pack—\$206.95

HiTechnic Touch Sensor Multiplexer

The *HiTechnic Touch Sensor Multiplexer* enables you to connect up to four *NXT Touch Sensors* to a single *NXT Intelligent Brick* sensor port. The LEGO® MINDSTORMS® Education Software can read the state of each different touch sensor or the state of all of them with a single read command. The Touch Sensor Multiplexer Block is available for free download at www.LEGOeducation.us/hitechnic. Ages 8+.

NX991446—\$28.99

Touch Sensor Multiplexer Value Pack

The value pack includes one *Touch Sensor Multiplexer* and four *NXT Touch Sensors*. Ages 8+.

NX991469—\$97.95



Color Sensor

- Create a music maker by having your robot play a different tone each time it comes to a different color of the rainbow.
- Teach your robot to say color names in a foreign language when it drives by a new color.
- Make a fashionista robot by having it choose its "clothes" by color.
- Have your robot follow a map by giving it directions based on color.

NXT Color Sensor

The *NXT Color Sensor* is able to perform three unique functions. It acts as a color sensor, distinguishing among six colors; it works as a light sensor, detecting light intensities: both reflected light and ambient light; and it works as a color lamp, emitting red, green, or blue light. Requires LEGO® MINDSTORMS® Education *NXT Software 2.1*. Ages 8+.

NX979694—\$34.95

NX991815 4-Pack—\$137.95

NX991816 8-Pack—\$271.95

NX991817 12-Pack—\$402.95

Codatex RFID Sensor

- Have the *NXT* operate a gate that opens only when the correct RFID tag is sensed.
- Play a game of “whodunit” with several robots as the suspects, and the crook will be revealed by the robot with the correct RFID tag.
- Play capture the flag with two or more *NXT* robots; one would have the RFID tag (flag), and the others would have to try to retrieve it.
- Have your robot drive through a path with a series of obstacles by programming it to perform a given task in order to remove the obstacle from its path.

Codatex RFID Sensor

The *Codatex RFID Sensor* works with 125 kHz transponders and can read five-byte transponder numbers into the *NXT Intelligent Brick*. The *RFID Sensor* has three different reading modes: single read, continuous read, and stop. The maximum reading distance depends on the transponder size; for example, the keyfob will read up to a maximum distance of 30 mm. One *RFID Sensor*, five keyfob transponders, five clear disc transponders, and two card transponders are included in this set. Requires *NXT* firmware 1.05 or later. For more information about the *RFID Sensor*, programming examples, and to download the programming block, visit www.LEGOeducation.us/codatex. Ages 8+.

NX991461—\$139.95



HiTechnic Acceleration Sensor

- Use an acceleration sensor on your robot to deliver a cup without spilling any contents of the cup.
- Use the acceleration sensor to ensure that the robot stays on a level surface.
- Use two *NXT* robots, and have one control the other with the acceleration sensor.

HiTechnic Acceleration Sensor

Now you can make robots that know which way is up! The *HiTechnic Acceleration Sensor* measures acceleration in three axes – x, y, and z. It also measures tilt along each axis. Using the sensor, you can measure the acceleration of your robot in the range -2g to +2g, with scaling of approximately 200 counts per g. The acceleration measurement for each axis is refreshed approximately 100 times per second. The sensor is great for experimenting and modeling acceleration forces in cars, on amusement rides, and even on swing sets. This sensor will also tell you if your robot is level, so you can build self-leveling robots and much more. Ages 8+.

NX991349—\$54.95

NX991620 4-Pack—\$215.95

NX991621 8-Pack—\$426.95

NX991622 12-Pack—\$633.95



HiTechnic Color Sensor

- Show off your robot's drawing skills by having it draw a line with a marker while following a specific color.
- Teach your robot to say color names in a foreign language when it drives by a new color.
- Make a candy sorter by having your robot sort candy according to color.

HiTechnic Color Sensor

Use the *HiTechnic Color Sensor* for your more advanced needs! Detect an extended range of more than 15 target colors and program your *NXT* robot to react to each color. The *Color Sensor* operates by using a single white LED (light-emitting diode) to illuminate the target, analyze the color components of the light reflected by the target's surface, and calculate a color number that is returned to the *NXT* program. The color number calculated by the sensor is refreshed approximately 100 times per second. Ages 8+.

NX991348—\$54.95

NX991623 4-Pack—\$215.95

NX991624 8-Pack—\$426.95

NX991625 12-Pack—\$633.95



HiTechnic IRLink Sensor

- Use your robot to control a LEGO® remote-control train.
- Combine with the *IRSeeker* and have your robots play follow the leader or tag.
- Use the *IRLink* Sensor combined with the Power Function receiver to control Power Functions motors from your *NXT*.

HiTechnic IRLink Sensor

The *HiTechnic IRLink Sensor* uses infrared signals to communicate with the MINDSTORMS® *RCX* and the LEGO® Power Function system used in the *Simple and Motorized Mechanisms Set*. The *IRLink* enables the *NXT* programming system to read values from the *RCX* sensors and control motors connected to the *RCX*. Ages 8+.

NX991453—\$54.95

NX991626 4-Pack—\$215.95

NX991627 8-Pack—\$426.95

NX991628 12-Pack—\$633.95



HiTechnic Compass Sensor

- Have your robot find coordinates on a chart by following given directions (north, south, east, west).
- Make a robot that tracks to a certain direction no matter which way you try to turn it.
- Make a weather vane that displays the direction the wind is blowing.

HiTechnic Compass Sensor

Tell your robots exactly where they should go with the *HiTechnic Compass Sensor*. This digital compass measures Earth's magnetic field in order to provide accurate navigation to your *NXT* projects. Use the sensor in Read mode to calculate the current position, or use it in Calibrate mode to compensate for externally generated magnetic field anomalies (like those you find near motors or batteries). Either way, you'll find this sensor to be a great addition to your MINDSTORMS® Education robotics set! Ages 8+.

NX991324—\$54.95

NX991629 4-Pack—\$215.95

NX991630 8-Pack—\$426.95

NX991631 12-Pack—\$633.95



HiTechnic IRSeeker Sensor

- Play a battleship-type game where the robot can discover a location using infrared beacons.
- Have your robot learn to bowl using the *IRSeeker* sensor with the IR-emitting ball.

HiTechnic IRSeeker Sensor

Play robot soccer and zero in on your infrared (IR) beacons with the new and enhanced *IRSeeker V2* (Version 2). You can use most TV remotes and LEGO® Power Functions remote controls as beacons that the *IRSeeker V2* will detect. With a specially designed curved lens and five internal detectors, the *IRSeeker V2* has a 240-degree view, making it perfect for playing robot soccer with the *Infrared Electronic Ball*. Ages 8+.

NX991379—\$49.95

NX991635 4-Pack—\$195.95

NX991636 8-Pack—\$387.95

NX991637 12-Pack—\$575.95

Infrared Electronic Ball

Pair it with the *HiTechnic IRSeeker Sensor*, and your students can have a soccer showdown or create an infrared beacon for their robot to find! Ages 8+.

NX991458—\$79.95



All HiTechnic sensors use a standard *NXT* cable and are housed in the MINDSTORMS® sensor housing; connector cables are sold separately. Sensor blocks are available for free download. Visit www.LEGOeducation.us/hitechnic for details.



HiTechnic EOPD Sensor

- Build a robot that can traverse rough terrain without tipping over.
- Create a robot that can follow a line even in a very low-light situation.

HiTechnic EOPD Sensor

The *EOPD*, or *Electro Optical Proximity Detector*, uses an internal light source to detect the presence of a target or determine changes in distance to a target. By generating its own light source, the *EOPD* is able to filter out all external light signals, so as a robot moves from bright areas to dimly lit areas or through shadows, the *EOPD* automatically compensates and only returns a signal based on its own light source. Targets can be accurately detected from distances up to about 8 inches (20 cm), depending on the target size, shape, and reflective qualities. Ages 8+.

NX991645—\$54.95

NX991654 4-Pack—\$215.95

NX991655 8-Pack—\$426.95

NX991656 12-Pack—\$633.95



HiTechnic Gyro Sensor

- Build a robot that is capable of balancing on two feet.
- Build a robotic delivery system that will maintain a level platform regardless of whether it is traveling across a level area or going up or down hills.
- Use multiple gyro sensors and create your own horizon indicator like you would see in an airplane.

HiTechnic Gyro Sensor

The *HiTechnic Gyro Sensor* contains a single-axis gyroscopic sensor that detects rotation and returns a value that represents the number of degrees per second of rotation, allowing the *NXT* to measure the additional dimension of rotation. The gyro sensor will let you accurately detect rotation for your *NXT* projects. The gyro sensor returns the number of degrees per second of rotation and also indicates the direction of rotation. Measure $\pm 360^\circ$ per second and build robots that can balance, swing, or perform other functions where measurement of rotation is essential. Ages 8+.

NX991380—\$54.95

NX991632 4-Pack—\$215.95

NX991633 8-Pack—\$426.95

NX991634 12-Pack—\$633.95



HiTechnic Magnetic Sensor

- Build a robot to seek and collect all the magnetic bricks in a pile of assorted LEGO® bricks.
- Make your robot follow you by carrying a magnetic LEGO brick in your hand.

HiTechnic Magnetic Sensor

The *HiTechnic Magnetic Sensor* will enable you to build robots that can detect magnetic fields. The sensor detects magnetic fields that are present around the front of the sensor in a vertical orientation. Ages 8+.

NX991786—\$22.95

NX991827 4-Pack—\$96.95

NX991828 8-Pack—\$193.95

NX991829 12-Pack—\$287.95

Visit www.nxtprograms.com for building and programming instructions for this and other cool models.



HiTechnic IRReceiver Sensor

- Create a LEGO® remote control for your robot.
- Design a start gate for a horse race.

HiTechnic IRReceiver Sensor



Control your NXT robot with the *HiTechnic IRReceiver Sensor* and a LEGO® Power Functions IR Remote Control. The *IRReceiver* decodes commands from a *Power Functions Remote Control*, and your NXT program can use the commands to directly control NXT motors or to control other functions in your program. Ages 8+.

NX991646—\$49.95

NX991657 4-Pack—\$195.95

NX991658 8-Pack—\$387.95

NX991659 12-Pack—\$575.95



HiTechnic Angle Sensor

- Create a weather station wind vane and data log the results of wind change.
- Build a robot that climbs stairs.
- Build a measuring wheel to calculate the square footage of your classroom.

HiTechnic Angle Sensor



The *HiTechnic Angle Sensor* provides a method to determine the angular position and rotation speed of an axle. When a LEGO Technic axle is connected to the *Angle Sensor*, the sensor will measure the axle rotation and output three properties: angular position in the range of 0 to 359 degrees, accumulated rotation angle in degrees, and axle rotation speed (RPM). The *Angle Sensor* supports separate commands to reset the current angle and the accumulated angle registers and provides a low-friction cross axle connection and is accurate to one degree resolution.

All HiTechnic sensors use a standard NXT cable and are housed in the MINDSTORMS® sensor housing; connector cables are sold separately. Sensor blocks are available for free download at www.LEGOeducation.us/hitechnic. Ages 8+.

NX991647—\$44.95

NX991660 4-Pack—\$176.95

NX991661 8-Pack—\$348.95

NX991662 12-Pack—\$517.95

HiTechnic Sensor Multiplexer

The *HiTechnic Sensor Multiplexer* allows up to four sensors to be connected to one NXT Intelligent Brick sensor port. Use any combination of LEGO® and HiTechnic sensors to expand your robot's sensor capabilities. Connect more than one *HiTechnic Sensor Multiplexer* for more connectivity. Programming support for LabVIEW™ Education Edition and ROBOTC®. Ages 8+.

NX991560—\$57.95

All HiTechnic sensors use a standard NXT cable and are housed in the MINDSTORMS® sensor housing; connector cables are sold separately. Sensor blocks are available for free download. Visit www.LEGOeducation.us/hitechnic for details.





Robotics Engineering Resources Programming Curriculum Research Training Technology

Real World Challenges

Carnegie Mellon

Educate to innovate! Carnegie Mellon University and LEGO® Education North America have a longtime partnership that is committed to helping teachers prepare students for their future by creating a curriculum continuum of research-based, classroom-tested materials that use the motivational effects of robotics to teach mathematics, engineering, science, technological literacy, and computer science. Carnegie Mellon University, a world leader in the development of robotics technologies, is home to the Robotics Academy. The Robotics Academy consists of a team of educators and engineers that uses robotics as a medium to create, test, and deploy hands-on, mind-on activities and curriculum designed to teach STEM. The Academy also conducts educational research and offers extensive professional development opportunities designed to help teachers prepare their students to compete globally in the 21st century. While the scope of new technologies can't be predicted, it will include programming, embedded systems, engineering design, and mathematics – all skills the Robotics Academy is dedicated to teaching through robotics.

NXT Video Trainer 2.0

Programming is a basic skill for the twenty-first century. The *NXT Video Trainer* provides high-quality, student-tested instruction designed to teach programming. Independent learners will find it a captivating self-paced curriculum. Classroom teachers will appreciate it as an automated teaching assistant, enabling students to learn at their own pace while instructors provide individualized support.

The *NXT Video Trainer* provides a simple and effective way of learning NXT programming. Perfect for homeschool, traditional classrooms, and FLL coaches and teams! The *NXT Video Trainer* is sold as a classroom license and enables teachers to install the software on every computer in a single classroom. Developed by Carnegie Mellon Robotics Academy.

NX991541—\$270



MINDSTORMS® Education Robotics Engineering I: Introduction to Mobile Robotics

Use robotics to bring science, technology, engineering, and mathematics (STEM) to life for students!

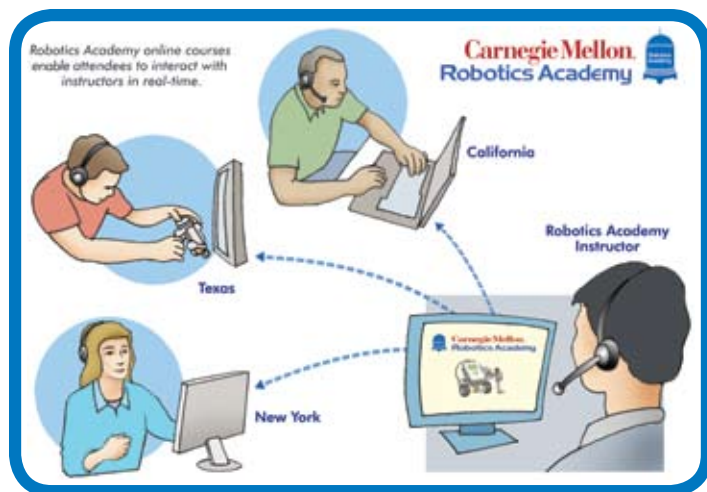
This curriculum supports beginning robotics students, with a dual emphasis on programming and standards-based academic STEM concepts. Each of the six projects begins with a robotics research prototype in which students are guided step-by-step through the building and programming of a new robot behavior. Afterwards, they follow up their prototype work with a robotics investigation in which the students experiment with the robot's motors, sensors, and programming to learn how robots really work.

MINDSTORMS® Education Robotics Engineering I: *Introduction to Mobile Robotics* curriculum is sold as a classroom license and enables the teacher to place the curriculum on every computer in a single classroom. Developed by Carnegie Mellon Robotics Academy.

NX991282—\$274.95



See pages 28-30 for complete robotics packages featuring sets, software, and Carnegie Mellon University Curriculum.



NXT Online Professional Development

Teaching robotics can be a daunting task for a new teacher. Taught by the Carnegie Mellon Robotics Academy's professional staff, this six-week Web-based course is designed to support teachers as they learn how to program using the LEGO® MINDSTORMS® Education NXT Software. It will also cover the unique pedagogy involved in using robotics to teach science, technology, engineering, and mathematics. Teachers who subscribe to this class will receive *NXT Video Trainer 2.0* (\$265 value), a USB headset that will be used during class, a certificate of completion from Carnegie Mellon Robotics Academy after successfully completing the course, and much more.

Developed and taught by Carnegie Mellon Robotics Academy, which teaches hundreds of robotics teachers every year and has experience with students of all ages. Schedule of classes is posted at www.LEGOeducation.us/onlineschedule.

NX991543—\$499

MINDSTORMS® Education Robotics Engineering II: Guided Research

Challenge students to solve three real-world robotics engineering problems.

Students learn engineering as they continually develop solutions to robotic challenges currently found in agriculture, security, and energy. They have a chance to solve the same problems that today's scientists and engineers are facing. Using an engineering journal to document their progress, students conduct research; develop prototypes of potential solutions; select their optimal solution; and then build, test, and improve the design before presenting it to the "customer."

This curriculum, when coupled with *Introduction to Mobile Robotics*, covers more than 18 weeks of robotics engineering instruction.

MINDSTORMS® Education Robotics Engineering II: *Guided Research* curriculum is sold as a classroom license and enables the teacher to place the curriculum on every computer in a single classroom. Developed by Carnegie Mellon Robotics Academy.

NX991283—\$274.95



Robot Science Featuring Data Logging

Teach students the scientific principles of motion, heat, sound, and light and color using LEGO® Education robots! Students will design and develop robotic prototypes using the powerful features of the *NXT Brick* to collect and log data and form conclusions that will cement their understanding of important scientific and technological concepts.

This teaching tool features five standards-based science and technology projects designed to teach scientific methodology and engineering process as students use sensors to measure speed, heat, light, and sound.

No prior experience with the *NXT* or programming is required. This product aligns with national math, science, and technology education standards. Unlock the scientific power of the *NXT*!

Robot Science is sold as a classroom license and enables the teacher to place the curriculum on every computer in a single classroom. Developed by Carnegie Mellon Robotics Academy.

NX209791—\$185



Deep Space TerraFormers Camp-on-a-Disk

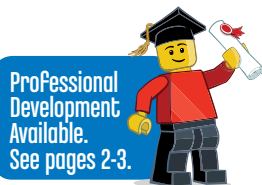
Designed for use with the LEGO® MINDSTORMS® Education Set and Software, the *Terraformers Camp-on-a-Disk* CD takes campers to the edge of the universe on a mission to make a distant planet habitable for humans. Videos and animations help campers build robots, learn programming, tackle challenges, and hone their robotics and project-planning skills. Science facts are interspersed throughout, accompanying engineering design activities tied into space exploration.

Terraformers is perfect for a one-week robotics camp or a nine-to-12-week after-school program. It provides extensive resources for a robo camp director, including a step-by-step camp guide, registration forms, awards sheets, game-board plans, themed props, and much more.

NX991468—\$230



**A
\$4,363.75
value!**



Professional Development Available.
See pages 2-3.

Robot Science – Getting Started Package

This Getting Started package has everything you need to introduce your students to data logging. The package is designed for 24 students working in pairs and includes:

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- 12 NXT Temperature Sensors
- Robot Science Featuring Data Logging

NX991491 Robot Science – Getting Started Package—\$4,227.95

 **NX991797 Robot Science – Getting Started Package with Professional Development—\$5,977.95**
Ages 11+

Deep Space TerraFormers Camp-on-a-Disk Value Packs

These packs have everything you need to start an after-school program, summer camp, or robotics club. Ages 8+.

TerraFormers Camp-on-a-Disk 4-Pack

- 4 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- Deep Space Terraformers Camp-on-a-Disk

NX991639—\$1,655.95 Save \$33

TerraFormers Camp-on-a-Disk 8-Pack

- 8 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- Deep Space Terraformers Camp-on-a-Disk

NX991640—\$2,725.95 Save \$83

TerraFormers Camp-on-a-Disk 12-Pack

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- Deep Space Terraformers Camp-on-a-Disk

NX991641—\$3,772.95 Save \$156



ROBOTC® Software

Based on the industry-standard C language, *ROBOTC®* is a single programming solution for both LEGO® MINDSTORMS® NXT and RCX. *ROBOTC* is specifically designed to program educational robots. It includes a user-friendly interface with basic and advanced programming options designed to enhance a new programmer's learning experience. The software is Windows XP, Vista, and 7 compatible.

NX991320—\$79.95

NX991323 ROBOTC® Software and 24-Seat License—\$399.95



A
\$4,034.30
value!

MINDSTORMS® Education ROBOTC® – Getting Started Package

This Getting Started package has everything you need to introduce *ROBOTC®* to your classroom. The package is designed for 24 students working in pairs and includes:

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- ROBOTC® Software and 24-Seat License
- Teaching ROBOTC® for LEGO® MINDSTORMS®

NX991442 MINDSTORMS® Education ROBOTC® – Getting Started Package—\$3,894.95



NX991798 MINDSTORMS® Education ROBOTC® – Getting Started Package with Professional Development—\$5,694.95

Ages 8+

Professional
Development
Available.
See pages 2-3.



Teaching ROBOTC® For LEGO® MINDSTORMS®

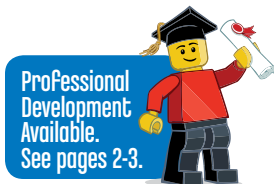
Today, knowing how to program is valuable. Tomorrow, it will be invaluable. *Teaching ROBOTC® for LEGO® MINDSTORMS®* teaches robotic C programming to nonprogrammers. Using the *ROBOTC* software and LEGO RCX- or NXT-based robots, this programming curriculum covers everything a new programmer needs, including setup, fundamentals, movement, sensing, and variables.

Teaching ROBOTC for LEGO MINDSTORMS is an effective teaching tool for classroom or independent instruction. A classroom license enables teachers to install the training software on every computer in a single classroom. Developed by Carnegie Mellon Robotics Academy.

NX991376—\$274.95



A
\$3,994.30
value!



Professional
Development
Available.
See pages 2-3.



Professional
Development
Available.
See pages 2-3.

MINDSTORMS® Education Robotics Engineering I – Getting Started Package

This Getting Started package is complete with everything you need to set up a MINDSTORMS® Education robotics classroom for 24 students working in pairs. The package comes complete with:

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- MINDSTORMS® Education Robotics Engineering I: Introduction to Mobile Robotics
- MINDSTORMS® Education Poster Pack

**NX991286 MINDSTORMS® Education Robotics Engineering I –
Getting Started Package—\$3,829.95**



**NX991795 MINDSTORMS® Education Robotics Engineering I –
Getting Started Package with Professional Development—\$5,629.95**

Ages 8+

A
\$4,269.25
value!

MINDSTORMS® Education Robotics Engineering II – Getting Started Package

This Getting Started package comes with everything needed to conduct both beginner and advanced MINDSTORMS® Education robotics projects in your classroom. The package is designed for 24 students working in pairs and includes:

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1 and Site License
- MINDSTORMS® Education Robotics Engineering I: Introduction to Mobile Robotics
- MINDSTORMS® Education Robotics Engineering II: Guided Research
- MINDSTORMS® Education Poster Pack

**NX991288 MINDSTORMS® Education Robotics Engineering II –
Getting Started Package—\$4,088.95**



**NX991796 MINDSTORMS® Education Robotics Engineering II –
Getting Started Package with Professional Development—\$5,888.95**

Ages 8+



MINDSTORMS® Education NXT Value Packs

Looking for only sets and programming software? These packs are for you! Ages 8+.

MINDSTORMS® Education Value Pack – 2

- 2 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1
(2 single licenses included in pack)

NX991416—\$709.95 Save \$9

MINDSTORMS® Education Value Pack – 4

- 4 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1
(4 single licenses included in pack)

NX991292—\$1,410.95 Save \$28

MINDSTORMS® Education Value Pack – 6

- 6 LEGO® MINDSTORMS® Education NXT Base Set
- LEGO® MINDSTORMS® Education NXT Software 2.1
and Site License

NX991415—\$1,969.95 Save \$49

MINDSTORMS® Education Value Pack – 8

- 8 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1
and Site License

NX991291—\$2,502.95 Save \$76

MINDSTORMS® Education Value Pack – 10

- 10 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1
and Site License

NX991414—\$3,029.95 Save \$109

MINDSTORMS® Education Value Pack – 12

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LEGO® MINDSTORMS® Education NXT Software 2.1
and Site License

NX991290—\$3,551.95 Save \$147

Need More Sensors?

The MINDSTORMS® Education NXT Set usually comes with a charger for the included rechargeable battery. If you've got enough chargers in your classroom and prefer to receive an extra sensor instead, check out these options. Ages 8+.

Comes with NXT Rechargeable DC Battery and requires a DC Charger.
See page 37 for more details.



MINDSTORMS® Education Sets Plus Color Sensor

Instead of a charger, these special packs include a *NXT Color Sensor* in its place. Ages 8+.

NX991825 MINDSTORMS® Education Set Plus Color Sensor—\$289.95

NX991818 4-Pack—\$1,234.95

NX991819 8-Pack—\$2,443.95

NX991820 12-Pack—\$3,627.95

MINDSTORMS® Education Sets Plus Light Sensor

Instead of a charger, these special packs include an extra *NXT Light Sensor* in its place. Ages 8+.

NX991499 MINDSTORMS® Education Set Plus Light Sensor Pack—\$279.95

NX991500 4-Pack—\$1,097.95

NX991501 8-Pack—\$2,172.95

NX991502 12-Pack—\$3,225.95

MINDSTORMS® Education Sets Plus Sound Sensor

Instead of a charger, these special packs include an extra *NXT Sound Sensor* in its place. Ages 8+.

NX991503 MINDSTORMS® Education Set Plus Sound Sensor Pack—\$279.95

NX991504 4-Pack—\$1,097.95

NX991505 8-Pack—\$2,172.95

NX991506 12-Pack—\$3,225.95

MINDSTORMS® Education Sets Plus Temperature Sensor

Instead of a charger, these special packs include a *NXT Temperature Sensor* in its place. Ages 8+.

NX991826 MINDSTORMS® Education Set Plus Temperature Sensor—\$294.95

NX991821 4-Pack—\$1,254.95

NX991822 8-Pack—\$2,482.95

NX991823 12-Pack—\$3,685.95

MINDSTORMS® Education Sets Plus Touch Sensor

Instead of a charger, these special packs include an extra *NXT Touch Sensor* in its place. Ages 8+.

NX991495 MINDSTORMS® Education Set Plus Touch Sensor Pack—\$279.95

NX991496 4-Pack—\$1,097.95

NX991497 8-Pack—\$2,172.95

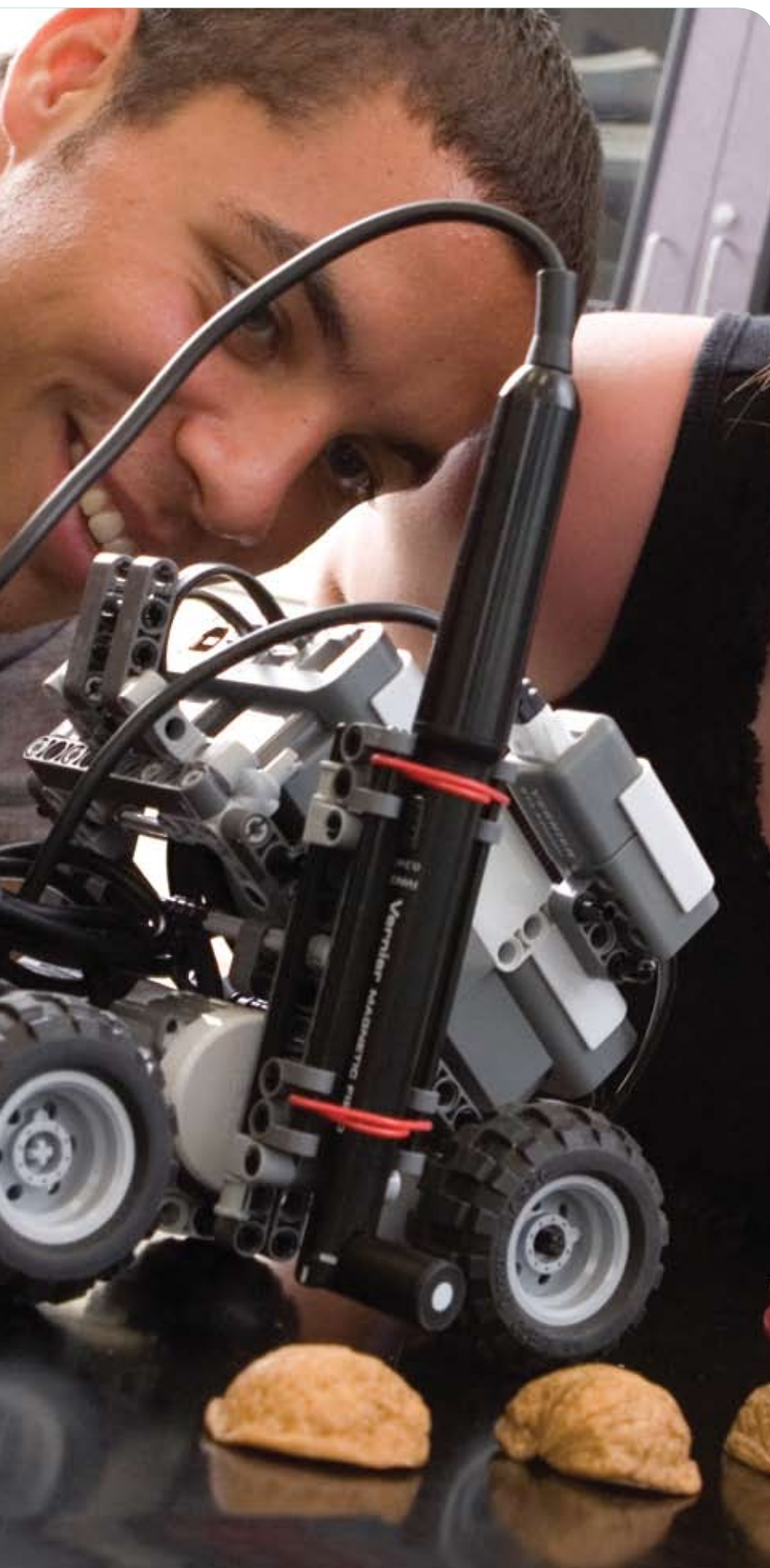
NX991498 12-Pack—\$3,225.95

Colors and decorative designs may vary.



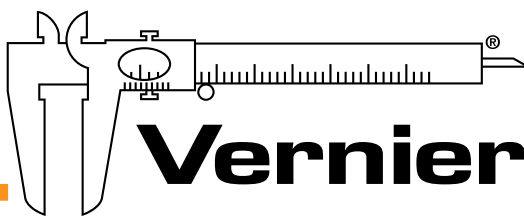
**Charger not
included.**

See page 37.



Sense the Excitement!

Sensors
Mechanisms
Science
Explore
Machines
Wheels
Robotics Ideas



Vernier

Vernier Software & Technology has been an innovator of data-collection technology for STEM education for more than 30 years, and its products are used in more than 130 countries. Vernier prides itself on creating easy-to-use, affordable sensors that help teachers enhance their STEM education curriculum, increase learning, and build students' critical-thinking skills. Vernier believes that getting students excited about science, engineering, and robotics is fundamental to developing twenty-first-century skills as well as encouraging students to become the scientists and engineers of the future. You can connect more than 30 Vernier sensors to the NXT, expanding the capability of your MINDSTORMS® robotic and data-logging projects to introduce core scientific topics in biology, physics, environmental science, and more.

Visit www.vernier.com/nxt For:

Activities using the Vernier Sensor Adapter for NXT and Vernier Sensors Project summaries, project descriptions, demo videos, project downloads (including programming and building instructions), equipment list, and much more.



Vernier Sensor Adapter for NXT

Increase the flexibility of your LEGO® MINDSTORMS® Education sets and software with Vernier sensors! For more than 25 years, Vernier Software & Technology has produced world-class data-collection solutions for teachers, and they have partnered with LEGO Education to bring their technology to the NXT system. With this sensor adapter, any of the 40+ Vernier analog (BTA) sensors can be incorporated into NXT creations. Vernier sensors can be purchased at www.vernier.com, and the programming block can be downloaded for free at www.LEGOeducation.us/vernier. Ages 8+.

NX779799—\$39



Visit www.vernier.com/nxt for project ideas, movies, and programs using the Vernier Sensor Adapter for NXT and Vernier sensors!

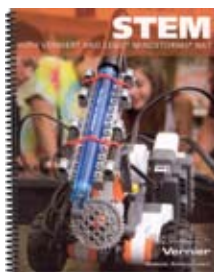
STEM with Vernier and LEGO® MINDSTORMS® NXT

The *STEM with Vernier and LEGO® MINDSTORMS® NXT* book covers core topics in Environmental Science; includes 14 lab activities involved in collecting data with Vernier pH, Conductivity, Temperature, UV, and Soil Moisture Sensors; and also includes four design-and-build robotics projects.

The Vernier sensors, coupled with the LEGO MINDSTORMS NXT Intelligent Brick and Software interface, enable students to do traditional science labs in a new way. In addition, the robotics projects provide an opportunity to learn about construction and engineering while adding an element of fun to learning.

A CD included with the book has editable student handouts in Word format and MINDSTORMS NXT sample programs, movie clips, and LEGO Digital Designer files with detailed instructions for building and operating the robotics projects. Buy one book and print out activities for your entire class. Spiral-bound, 226 pages. Level: Intermediate

NX991540—\$35



Vernier and MINDSTORMS® Science Bundle

Everything you need to complete the activities in the *STEM with Vernier and LEGO® MINDSTORMS® NXT* book in one convenient bundle. Includes:

- 2 Vernier Sensor Adapters for NXT
- Pneumatic Parts Pack
- 2 Vernier Temperature Probes
- Vernier pH Probe
- Vernier UVB Sensor
- Vernier Conductivity Probe
- Vernier Soil Moisture Sensor

NX991549—\$531.95

Colors and decorative designs may vary.

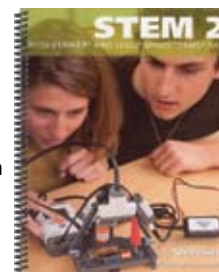
STEM 2 with Vernier and LEGO® MINDSTORMS® NXT

STEM 2 with Vernier and LEGO® MINDSTORMS® NXT is the second book of projects and labs developed in collaboration with LEGO Education and Vernier. It has activities using Vernier's Dual-Range Force Sensor, Magnetic Field Sensor, Voltage Probe, and Gas Pressure Sensor to motivate upper middle school and high school students to pursue science and engineering careers.

It includes 12 ready-to-use lab activities covering topics in physical science and engineering, including mechanics, pressure, electricity, and magnetism. Also included are eight design-and-build robotics projects challenging students to build and program robots for testing batteries, a "land mine" locator, an automated Cartesian diver, and more.

A CD included with the book has editable student handouts in Word format and MINDSTORMS NXT sample programs, movie clips, and LEGO Digital Designer files with detailed instructions for building and operating the robotics projects. Buy one book and print activities for your entire class. Spiral-bound, 241 pages. Level: Intermediate

NX991563—\$35



Vernier and MINDSTORMS® Science Bundle 2

Everything you need to complete the activities in the *STEM 2 with Vernier and LEGO® MINDSTORMS® NXT* book in one convenient bundle. Includes:

- Vernier Sensor Adapter for NXT
- Vernier Voltage Probe
- Vernier Dual-Range Force Sensor
- Vernier Gas Pressure Sensor
- Vernier Magnetic Field Sensor
- Vernier Luer-Lock Connector
- Solar Mini Panel (2-5/8" x 3-3/4") (2.0V, 200 mA)
- Solar Mini Panel with Alligator Clips

NX991569—\$299.95

LEGOeducation.us

**education****LEGO® MINDSTORMS® Education Books**

The Young Inventor's Project with LEGO® MINDSTORMS® Education NXT

The Young Inventor's Project is an innovative and engaging 30-hour curriculum introducing creative robotics to students in middle school. Your students will use humanities as a foundation for the exploration of past, present, and future inventions. The curriculum also includes:

- A four-part teacher's guide.
- Activities correlated to national standards.
- Digital resources.
- Reproducible student materials.

Training packages are also available to assist staff in program implementation. Spiral-bound, 120 pages.

Level: *Beginner-Intermediate*

NX991457—\$49.95

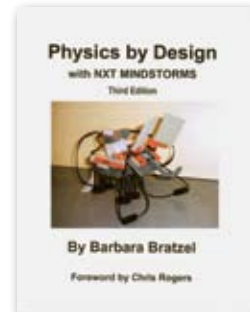


Physics by Design with NXT MINDSTORMS®

Physics by Design with NXT MINDSTORMS® teaches classical mechanics through engineering. It covers motion, forces, fluids, stability, work, and energy. The topics are approached from an engineering perspective, with building and designing reinforcing the conceptual physics material and vice versa. Most of the designing and building is done using MINDSTORMS equipment: *NXT Intelligent Brick*, motors, lamp bricks, and sensors. However, there are a number of activities that require only standard LEGO® bricks. The activities in this book were written for LEGO MINDSTORMS *Education NXT Software 2.0*. Paperback, 333 pages.

Level: *High School*

NX991562—\$36



Datalogging Activities For the Busy Teacher

This book provides more than 25 different data-logging activities that can be easily implemented in class. It utilizes the LEGO® MINDSTORMS® *Education NXT Software 2.0* to quickly and easily configure experiments and display the results.

Experiments are provided for the *NXT Touch, Sound, Light, Distance, and Temperature* sensors. Each experiment comes with teacher notes, sample graphs, and student worksheets. Spiral-bound, 124 pages.

Level: *Beginner-Intermediate*

NX991601—\$60



Educate NXT

Educate NXT is the ultimate *NXT* robotics resource for teachers and students. Teachers will find out how to successfully and confidently manage a robotics program within their school. A wide-ranging series of additional challenges round off an *NXT* resource written by teachers, for teachers. *Educate NXT* gives educators control within the robotics classroom yet fosters learning freedom and the buzz of student engagement. Includes graded student worksheets, extensive teacher sections, and *PowerPoints*. Paperback/spiral-bound, 275 pages.

Level: *Intermediate*

NX735870—\$45

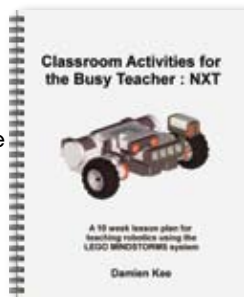


Classroom Activities for the Busy Teacher: NXT

Developed by Dr. Damien Kee, a doctor in robotics with a bachelor's degree in electrical engineering, *Classroom Activities for the Busy Teacher: NXT* contains a 10-week set of lesson plans geared toward fifth- through 10th-grade teachers who want to implement robotics into their classroom. Each lesson is centered around one robot and includes a scenario with background information, equipment list, teacher notes, programming examples, reproducible student worksheets, and extension activities. Spiral-bound, 123 pages.

Level: *Beginner-Intermediate*

NX991455—\$60



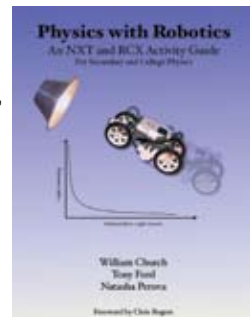
Physics with Robotics

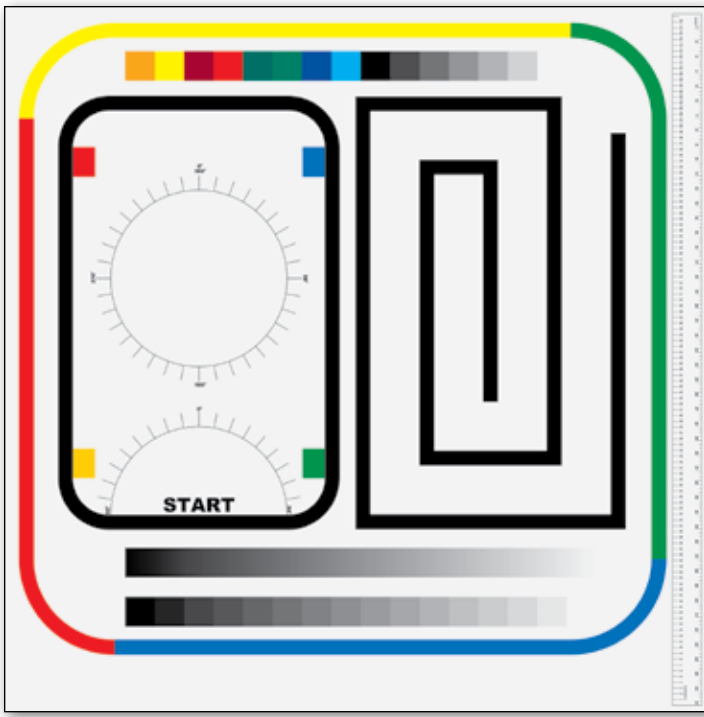
The *Physics with Robotics* book turns practical physics investigations into reality, inspiring students to create more project ideas for LEGO® MINDSTORMS®. Includes more than 20 classroom-tested activities covering topics such as force and motion, energy, vibrations and waves, and electricity and magnetism. For teachers new to robotics, the following primers are included: hardware and software resources, classroom organization and student management, LEGO building strategies, basic programming, and data-logging techniques using sensors.

The LEGO MINDSTORMS *Education NXT Base Set* and LEGO MINDSTORMS *Education NXT Software* are recommended. Many activities also support ROBOLAB™ software for use with *NXT* and *RCX Intelligent Bricks*. Paperback, 208 pages.

Level: *Intermediate*

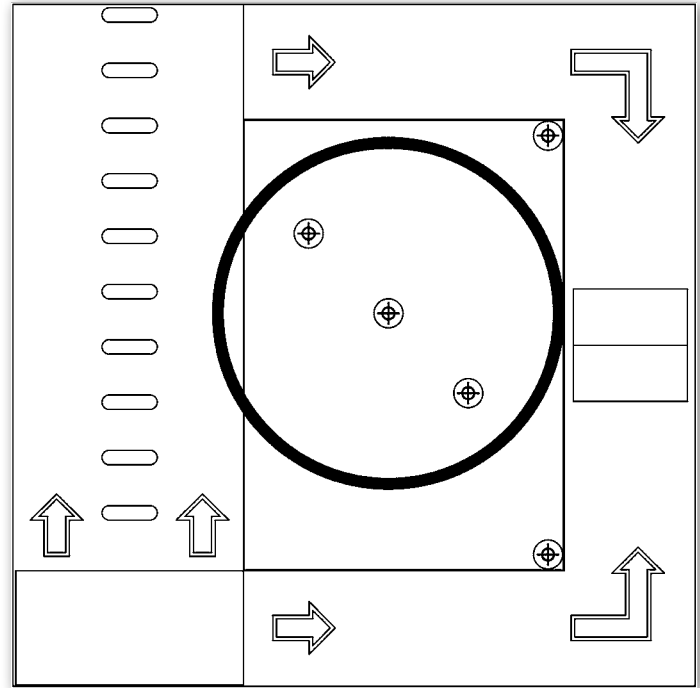
NX991521—\$21





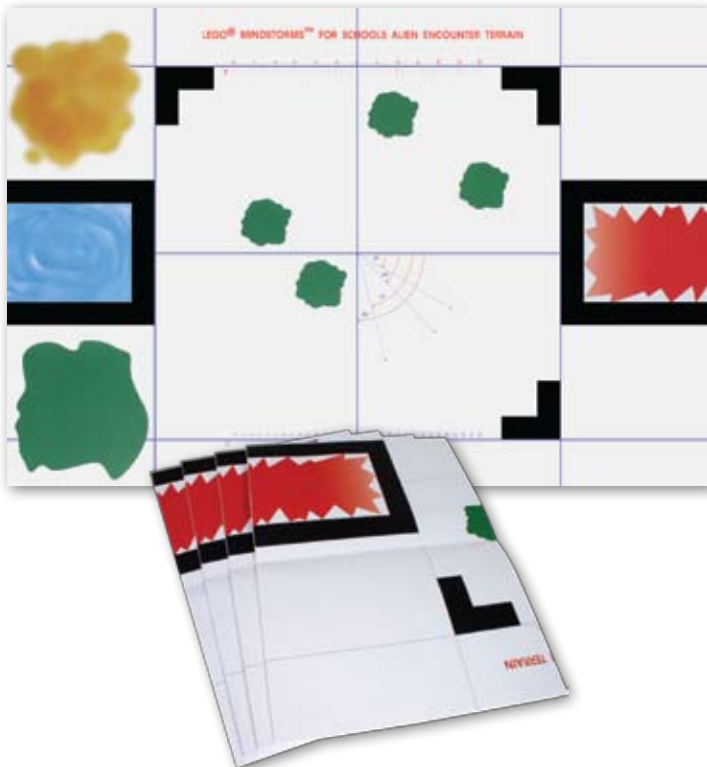
Robotics Activity Mat

This *Activity Mat* is perfect for advanced line-following activities, distance measuring, light sensor activities, and much more! The mat is made out of durable vinyl and measures 4' x 4'.
NX991644—\$60



Race Against Time Mat

The *Race Against Time Mat* was originally designed for the *Race Against Time Activity Pack*, but its uses are limitless. Create robotics activities and challenges of your own using the mat's preprinted lines and arrows. The mat is made of durable vinyl and measures 4' x 4'.
NX990974—\$40

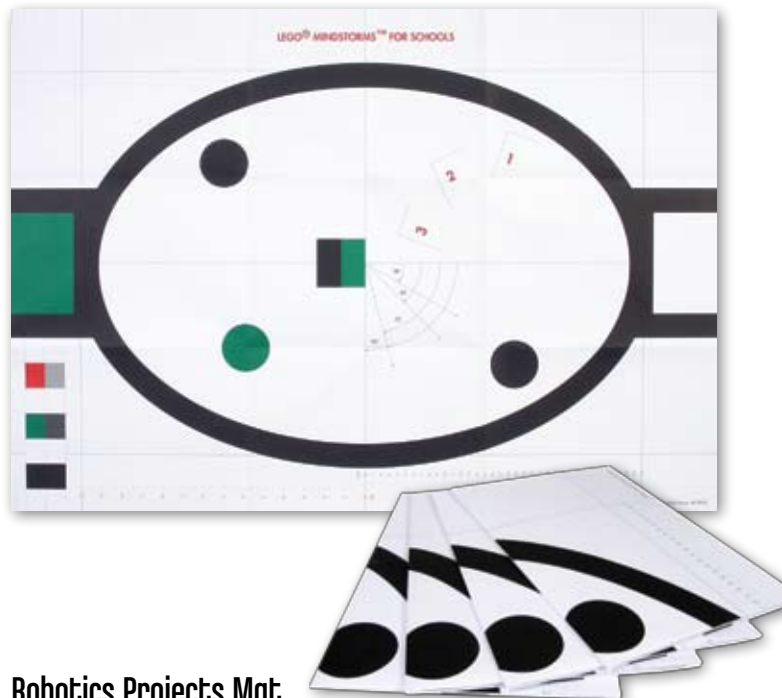


Alien Encounter Terrain Mats

Originally designed for use with the *Alien Encounter Activity Pack*, these mats can take on many applications in your robotics classroom. Mats are made of high-quality paper with full-color illustrations and provide a great activity surface for a variety of robots. Comes with five mats; each mat measures 35" x 25".

NX991126—\$13

Colors and decorative designs may vary.



Robotics Projects Mat

Add this mat to your collection of robot activity surfaces. Though originally designed for use with the *Robotics Projects Activity Pack*, this mat will come in handy in a variety of robotics activities. Comes with five mats made of high-quality paper; each mat measures 35" x 25".

NX991247—\$13



education

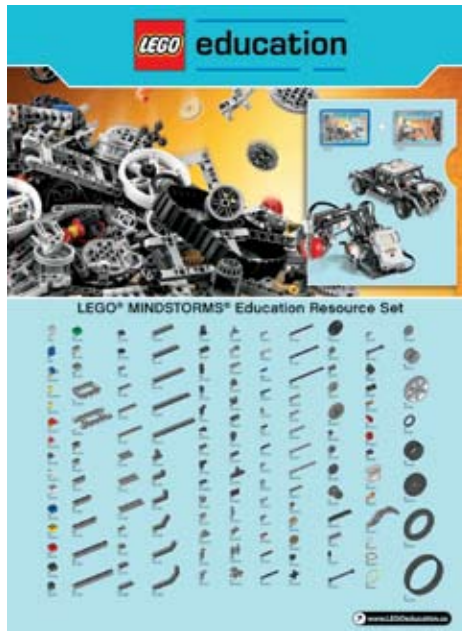
LEGO® MINDSTORMS® Education Posters



MINDSTORMS® Education Poster 1

This is the element survey for the LEGO® MINDSTORMS® Education NXT Base Set, 979797. 17" x 23".

NX771275—\$5



MINDSTORMS® Education Poster 2

This is the element survey for the LEGO® MINDSTORMS® Education Resource Set, 979695. 17" x 23".

NX771276—\$5



MINDSTORMS® Education Poster 5

17" x 23".

NX771279—\$5



MINDSTORMS® Education Poster 4

17" x 23".

NX771278—\$5

MINDSTORMS® Education Poster Pack

These posters bring the world of LEGO® Education robotics to the classrooms, hallways, and labs of your school. Get all five posters in this one convenient pack, or buy them individually. Each poster measures 17" x 23".

NX991840—\$20



MINDSTORMS® Education Poster 3

This is the element survey for the TETRIX® Education Base Set, 739143. 17" x 23".

NX771277—\$5



Visit www.nxtprograms.com for building and programming instructions for the models featured on the MINDSTORMS posters and other cool models.

NXT Intelligent Brick

This state-of-the-art programmable intelligent brick serves as the brain for LEGO® Education robots. The brick features four input ports for taking in data and three output ports for distributing the data as commanded. Students transfer their programs from the computer to the brick using a USB cable or Bluetooth technology. With on-brick programming and a 32-bit microprocessor, this intelligent brick is ready for anything students might create! The brick is powered by six AA batteries or the 979693 *NXT Rechargeable DC Battery* (each sold separately). Ages 8+.

NX979841—\$144.95



NXT Connector Cables

Use this cable pack to supplement your cable selection. Includes one .2M cable, two .5M cables, and four .35M cables. Ages 8+.

NX991781—\$10

NX991534 NXT Extended Connector Cables Set (pkg of 4)—\$6.50

NXT Interactive Servo Motor

This motor uses a servo for precise control – within one degree. These intelligent motors automatically align the speed with which the robot moves, and each features a built-in rotation sensor. Ages 8+.

NX979842—\$18.95



NXT Brick and Accessories 37

PowerSquid 5 Outlet Multiplier

A solution to the all-too-frequent problem of how to charge multiple *NXT Intelligent Bricks*! With a standard power strip, there's no way to fit more than three chargers, which means you've got to find a place to plug in and store lots of power strips. With the *PowerSquid*, you can easily attach five chargers to the flexible outlets. The *PowerSquid* features outlets that can accommodate standard and transformer plugs, a lighted switch with a 15-amp circuit breaker, and a four-foot, 14-gauge grounded power cord. It even has keyhole slots on the back to make wall mounting a breeze!

NX991316—\$19.99



NXT Bluetooth Dongle

The *NXT Intelligent Brick* can receive programs two ways – through a Bluetooth signal or through a USB cable. If you choose to use Bluetooth but your computer isn't Bluetooth enabled, then this small dongle is your answer. Plug it into a USB port on your computer, and you'll be able to communicate with the *NXT Intelligent Brick* by using Bluetooth technology. Ages 8+.

NX979847—\$39.95



Sensor sold separately.

NXT Conversion Cable

With this cable, you can use your legacy *RCX* sensors and motors with the *NXT Intelligent Brick*! Three of these cables are also included in the 979797 LEGO® MINDSTORMS® Education *NXT Base Set*. Ages 8+.

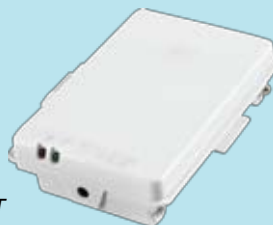
NX770323 (pkg of 3)—\$10



NXT Rechargeable DC Battery

Designed for use with the *NXT Intelligent Brick*, this new DC lithium ion polymer battery with 2100 mAh of power is an alternative to AA batteries and replaces the original AC version of the *NXT Rechargeable Battery*. Estimated recharge time is 4-5 hours. **The battery requires the DC Charger (778887, sold separately) and is not compatible with the AC Charger (979833).** One *NXT Rechargeable DC Battery* and *DC Charger* are included in the LEGO® MINDSTORMS® Education *NXT Base Set*.

NX979693—\$54.95



DC Charger

Recharge your battery! This standard 10V DC transformer plugs into an AC outlet to recharge your *Rechargeable DC Battery* (979693) for the *NXT Intelligent Brick* or your *Power Functions Rechargeable Battery Box* (778878), sold separately. Ages 7+.

NX778887—\$24.99

NX991738 4-Pack—\$97.95

NX991739 8-Pack—\$193.95

NX991740 12-Pack—\$287.95

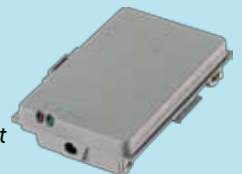


As of May 11, 2010, the LEGO® MINDSTORMS® Education *NXT Base Set* now comes with the new eco-friendly *NXT Rechargeable DC Battery* and *DC Charger*, which are not compatible with the AC battery and charger.

NXT Rechargeable AC Battery

This rechargeable lithium battery is designed for use with the *NXT Intelligent Brick*. The battery features 1400 mAh of power and an AC plug for direct power supply. The battery will charge from 0 to full in a maximum of four hours. Requires the 979833 *AC Charger* to charge the battery (sold separately). Ages 8+.

NX979798—\$54.95



AC Charger

This transformer can be used to charge the original *NXT Rechargeable AC Battery* (gray battery) used for the *NXT Intelligent Brick* or to power the *RCX Programmable Brick*. Ages 8+.

NX979833—\$23.95





As Flexible As Your Imagination!

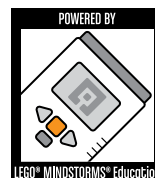
Metal
Robotics
Engineering
System
Powerful
Building
Design
Competitions



TETRIX® by Pitsco is a great addition to any high school MINDSTORMS® NXT robotics classroom. The new metal building system was designed specifically to work with the LEGO® Technic building system through the use of the innovative *Hard Point Connector*. *TETRIX*, combined with new custom controllers, enables your students to use the power of the MINDSTORMS technology to incorporate and control powerful DC and servo motors and metal gears. Your students can now build more versatile and robust robots designed for more sophisticated tasks, all while mastering basic wiring, multi-motor control, and much more.

Visit
www.TETRIXrobotics.com
For information about:

- How to get started.
- Basic builds.
- FTC competitions.
- And much more!





Sets



Software



Activities



Learning Targets

Engineering Process

- Learn project management and time management
- Experience iterative testing and problem-solving strategies
- Explore different types of analysis
- Evaluate design alternatives based on analysis
- Communicate results through reports and presentation

Technology

- Advanced NXT programming

Science

- Interpret data readings
- Analyze readings

SAMPLE ACTIVITY

Personal Waiter

Objective: Students will learn about torque and gear ratios while building an automated personal waiter to deliver a canned drink without shaking or spilling the beverage.

Students will:

- Design and construct a programmable MINDSTORMS® robot with metal elements.
- Experiment with metal gears and DC motors to build a powerful mechanism.
- Program a robot to react independently based on sensor feedback.
- Utilize encoders and servo motors to precisely control a robotic arm.
- Research, evaluate, and communicate design alternatives.

Extensions:

- Pick up drink and deliver through a maze to a specific destination.
- Have the robot traverse through various substances (dry rice, dry beans, wooden dowels, etc.) to deliver drink.
- Have the robot traverse through a variety of obstacles to deliver drink.



Harness the power of MINDSTORMS® Education and TETRIX® for gear-grinding fun with FIRST Tech Challenge! Learn more at usfirst.org.



As Flexible As Your Imagination.



TETRIX® Education Base Set

The TETRIX® Education Base Set has everything needed to build metal TETRIX robots that can be controlled by the LEGO® MINDSTORMS® NXT Intelligent Brick. This set includes a CD-ROM, developed by Carnegie Mellon Robotics Academy, that introduces users to the TETRIX building system and provides key hardware basics and select programming fundamentals for first-time users. Also included in the set:

- TETRIX Building System
- TETRIX Hard Point Connectors
- HiTechnic DC Motor Controller
- HiTechnic Servo Controller
- 12V Rechargeable NiMH Battery Pack

LEGO MINDSTORMS Education NXT Software 1.1 or higher is required to program the NXT. LEGO MINDSTORMS Education NXT Base Set and Software sold separately. Ages 14+.

NX739143—\$625.95

NX991573 2-Pack—\$1,233.95 Save \$17

NX991574 4-Pack—\$2,453.95 Save \$49

NX991575 6-Pack—\$3,662.95 Save \$92

NX991576 8-Pack—\$4,835.95 Save \$171

NX991577 10-Pack—\$6,040.95 Save \$218

NX991578 12-Pack—\$7,210.95 Save \$300



MINDSTORMS® and TETRIX® Value Packs

Get both the TETRIX® Education Base Set and LEGO® MINDSTORMS® Education NXT Base Set in these convenient packs! Software sold separately. Ages 14+.



MINDSTORMS® Education Base Set with TETRIX®

- LEGO® MINDSTORMS® Education NXT Base Set
- TETRIX® Education Base Set

NX991520—\$897.95 Save \$7

MINDSTORMS® Education Base Set with TETRIX® 2-Pack

- 2 LEGO® MINDSTORMS® Education NXT Base Sets
- 2 TETRIX® Education Base Sets

NX991579—\$1,768.95 Save \$26

MINDSTORMS® Education Base Set with TETRIX® 4-Pack

- 4 LEGO® MINDSTORMS® Education NXT Base Sets
- 4 TETRIX® Education Base Sets

NX991580—\$3,519.95 Save \$71

MINDSTORMS® Education Base Set with TETRIX® 6-Pack

- 6 LEGO® MINDSTORMS® Education NXT Base Sets
- 6 TETRIX® Education Base Sets

NX991581—\$5,253.95 Save \$133

MINDSTORMS® Education Base Set with TETRIX® 8-Pack

- 8 LEGO® MINDSTORMS® Education NXT Base Sets
- 8 TETRIX® Education Base Sets

NX991582—\$6,968.95 Save \$214

MINDSTORMS® Education Base Set with TETRIX® 10-Pack

- 10 LEGO® MINDSTORMS® Education NXT Base Sets
- 10 TETRIX® Education Base Sets

NX991583—\$8,665.95 Save \$313

MINDSTORMS® Education Base Set with TETRIX® 12-Pack

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- 12 TETRIX® Education Base Sets

NX991584—\$10,344.95 Save \$430

Software sold separately!

MINDSTORMS® robots with TETRIX® can be programmed with the LEGO® MINDSTORMS® Education NXT Software (page 17), National Instruments LabVIEW™ Education Edition (page 43), ROBOTC® (page 29), or Intelligent Control Software (page 47).

See page 49 For new TETRIX® parts packs!



TETRIX® Resource Set

Add this resource set to your TETRIX® by Pitsco collection and build bigger and more complex robots and complete more challenging engineering projects. This set includes 40 metal building elements and comes complete with a convenient storage bin. Ages 14+.

NX731900—\$199.95

NX991585 2-Pack—\$393.95 Save \$5

NX991586 4-Pack—\$783.95 Save \$15

NX991587 6-Pack—\$1,169.95 Save \$29

NX991588 8-Pack—\$1,551.95 Save \$47

NX991589 10-Pack—\$1,929.95 Save \$69

NX991590 12-Pack—\$2,303.95 Save \$95



TETRIX® Gear Pack

Get all three sizes of the TETRIX® Gears in this one pack. Includes:

- Four 40-tooth gears
- Two 80-tooth gears
- Two 120-tooth gears

Ages 14+.

NX731901—\$99.95



TETRIX® Servo Motor Pack

The TETRIX® Servo Motor Pack has everything you need to add two 180-degree servos to your robot. And with three different mounting systems, you can choose to attach them however you like. Pack includes:

- Single Servo Bracket Pack
- Servo Bracket with Joint Pack
- Double Servo Bracket Pack
- Two 180° Servos with Horn
- Two Servo Extension Packs
- Servo Y Pack
- HiTechnic Servo Controller

Ages 14+.

NX731138—\$149.95



TETRIX® DC Motor Pack

The TETRIX® DC Motor Pack has everything you need to incorporate two more DC motors to your robot. Includes:

- 2 DC Drive Motors
- 2 Motor Mounts
- 1 HiTechnic DC Motor Controller
- 2 Motor Leads
- 1 Motor Shaft Hubs

Ages 14+.

NX731137—\$149.95

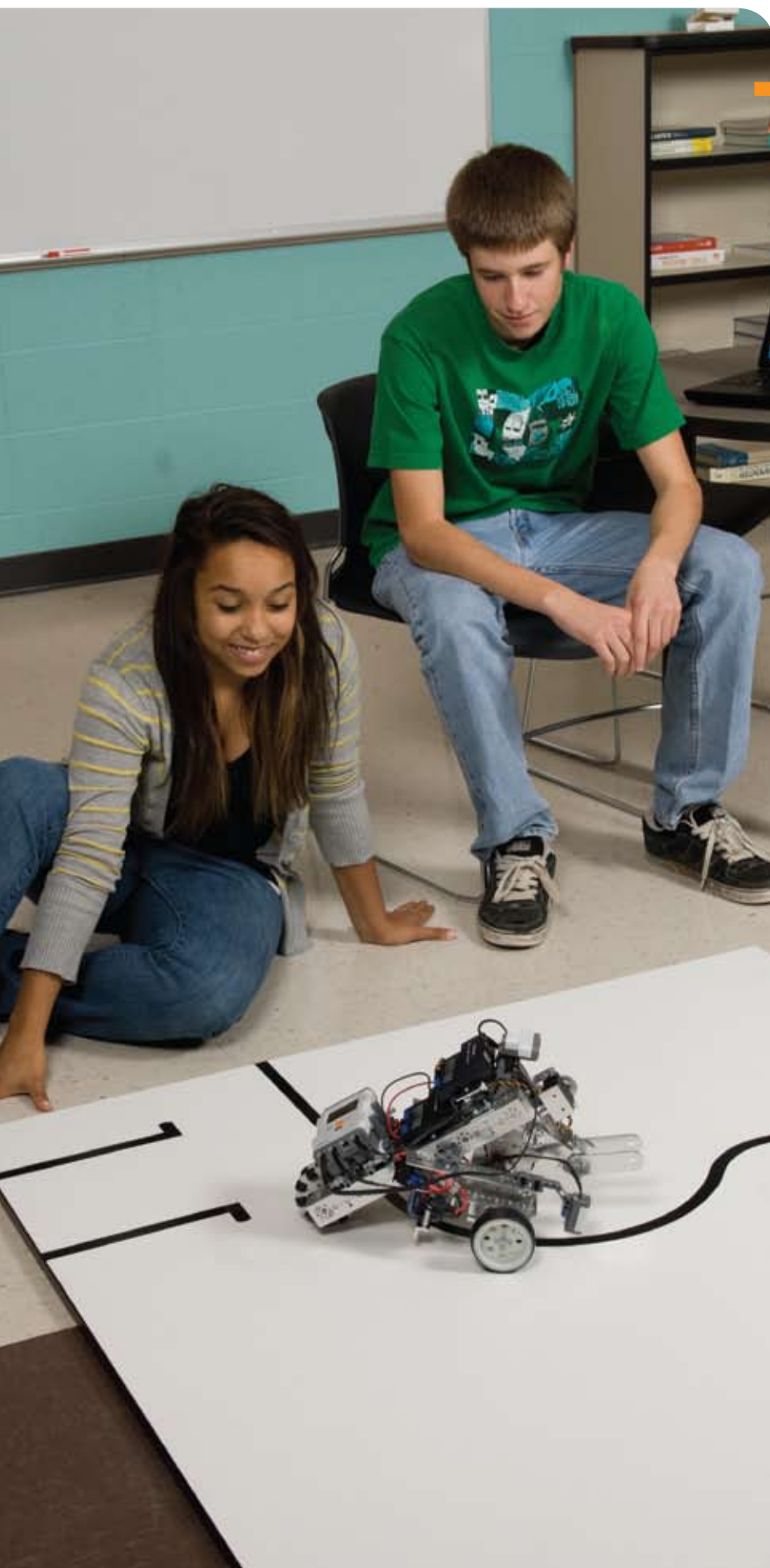
TETRIX® Hard Point Connectors

The Hard Point Connector takes LEGO® MINDSTORMS® Education to a whole new level by allowing LEGO Technic elements to be connected to the revolutionary metal building system, TETRIX® by Pitsco! The connector is key to giving students the ability to build more robust and real-world robotics creations. Ages 14+.

NX739120 (pkg of 12)—\$12



More parts and packs available on pages 44-53.



Explore Robotics!

Programming
Control
Robotics
Technology
Engineering
Explore
Science
Software



National Instruments is committed to enhancing engineering and science education worldwide by providing educators and students with powerful graphical system design software and modular hardware to connect the curriculum with the real world. Professors and students benefit from powerful, professional tools such as NI LabVIEW™ graphical development software, which helps students visualize and implement engineering concepts. The integration of LabVIEW in the classroom creates an effective, dynamic learning environment – from LEGO® Education WeDo™ Robotics in elementary schools to research laboratories in universities.

Visit us at
LEGOeducation.us/LabVIEW
For activities, getting started
tips, lessons, and videos using
LabVIEW™ with LEGO MINDSTORMS®
and TETRIX® by Pitsco.

Powered by

**LabVIEW™ Education Edition**

Professional
Development
Available.
See pages 2-3.



National Instruments *LabVIEW™ Education Edition* software is a graphical programming environment widely used in education and by scientists and engineers in industry. *LEGO® MINDSTORMS® Education NXT Software* was written in *LabVIEW*, providing a natural progression for current users to *LabVIEW* for a more advanced experience.

The NI *LabVIEW Education Edition* software helps high school teachers bring science, technology, engineering, and math (STEM) concepts to life through hands-on learning. With *LabVIEW*, you can quickly build a program to log data, power a robot, or analyze information. The new *LabVIEW Education Edition* was designed in conjunction with Tufts Center for Engineering Education Outreach to meet the needs of engineering educators and works seamlessly with educational hardware such as LEGO MINDSTORMS NXT; Vernier Sensor DAQ and Go! Sensors; and *TETRIX®*, a metal building system by Pitsco. The software runs on Windows or Mac OS.

NX991638—\$99.95**LabVIEW™ Education Edition 25-Seat License**

The 25-seat license allows for the installation of the software on 25 computers in a single school or institution.

NX991668—\$1,499.95

Special Offer for ROBO LAB Users!
Find out more at
www.LEGOeducation.us/LabVIEW.

LEGO® MINDSTORMS® Education with LabVIEW™ Value Packs

Bring science, technology, engineering, and math to life through hands-on learning with *LabVIEW™ Education Edition* and *LEGO® MINDSTORMS® Education NXT* with these special packs.

LEGO® MINDSTORMS® Education with LabVIEW™ 4-Pack

- 4 LEGO® MINDSTORMS® Education NXT Base Sets
- LabVIEW™ Education Edition
(4 single licenses included in pack)

NX991598—\$1,457.95 Save \$61**LEGO® MINDSTORMS® Education with LabVIEW™ 6-Pack**

- 6 LEGO® MINDSTORMS® Education NXT Base Sets
- LabVIEW™ Education Edition
(6 single licenses included in pack)

NX991599—\$2,177.95 Save \$101**LEGO® MINDSTORMS® Education with LabVIEW™ 8-Pack**

- 8 LEGO® MINDSTORMS® Education NXT Base Sets
- LabVIEW™ Education Edition
(8 single licenses included in pack)

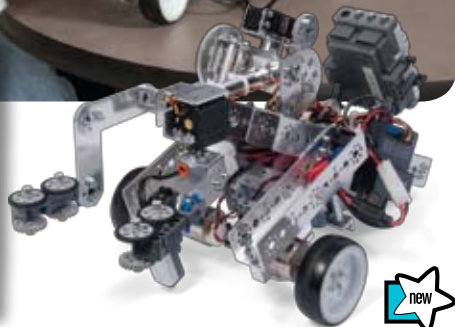
NX991617—\$2,852.95 Save \$186**LEGO® MINDSTORMS® Education with LabVIEW™ 10-Pack**

- 10 LEGO® MINDSTORMS® Education NXT Base Sets
- LabVIEW™ Education Edition
(10 single licenses included in pack)

NX991618—\$3,501.95 Save \$297**LEGO® MINDSTORMS® Education with LabVIEW™ 12-Pack**

- 12 LEGO® MINDSTORMS® Education NXT Base Sets
- LabVIEW™ Education Edition
(12 single licenses included in pack)

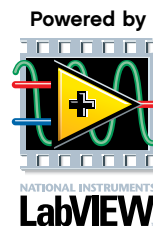
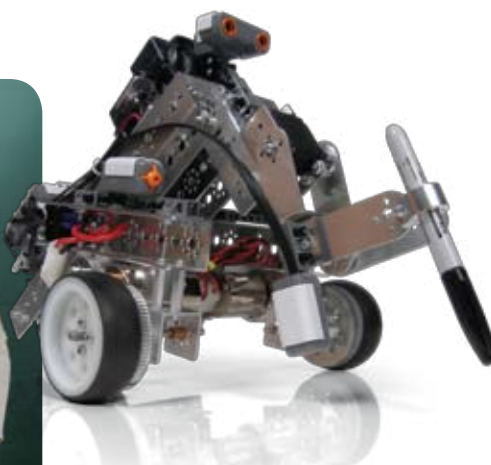
NX991619—\$4,185.95 Save \$373



Engineering with LabVIEW™: High School Robotics Activities

This activity set features a series of 10 progressive building and programming units that introduce students to *LabVIEW™ Education Edition* with LEGO® MINDSTORMS® NXT and TETRIX® by Pitsco. With these activities, students put the engineering design process into practice in an assistive robotics theme, providing real-world scenarios and open-ended challenges perfect for any high school engineering, technology, or robotics class. Delivery of the activities is flexible – all necessary resources are included to facilitate either a teacher-led or student-centric delivery method. In addition to a printed teacher guide, separate teacher and student CD-ROMs are included. The student CD features an interactive interface that enables easy access to printable worksheets and quizzes, instructional videos that walk students through programming in *LabVIEW Education Edition*, and a toolbox that includes a parts library, glossary, and more. The teacher CD includes all of these items plus answer keys and programming solutions, assessment rubrics, robot building instructions, and digital versions of teacher notes. The activities provide a minimum of 30 hours of class time and include extension ideas to expand the use of the hardware and software. Required are *LabVIEW Education Edition* seats for each student computer and one MINDSTORMS Education Base Set with TETRIX for every two students.

NX991729—\$299



LabVIEW™ Education Edition with MINDSTORMS® and TETRIX® Value Packs.

These value packs include everything needed for your students to behave like real scientists and engineers while learning graphical programming, problem solving, the engineering design process, and more.

LabVIEW™, MINDSTORMS®, and TETRIX® 4-Pack

- 4 MINDSTORMS® Education Base Sets with TETRIX®
- LabVIEW™ Education Edition (4 single licenses included in pack)
- Engineering with LabVIEW™: High School Robotics Activities

NX991592—\$4,178.95 Save \$111

LabVIEW™, MINDSTORMS®, and TETRIX® 6-Pack

- 6 MINDSTORMS® Education Base Sets with TETRIX®
- LabVIEW™ Education Edition (6 single licenses included in pack)
- Engineering with LabVIEW™: High School Robotics Activities

NX991593—\$6,092.95 Save \$193

LabVIEW™, MINDSTORMS®, and TETRIX® 8-Pack

- 8 MINDSTORMS® Education Base Sets with TETRIX®
- LabVIEW™ Education Edition (8 single licenses included in pack)
- Engineering with LabVIEW™: High School Robotics Activities

NX991594—\$7,947.95 Save \$334

LabVIEW™, MINDSTORMS®, and TETRIX® 10-Pack

- 10 MINDSTORMS® Education Base Sets with TETRIX®
- LabVIEW™ Education Edition (10 single licenses included in pack)
- Engineering with LabVIEW™: High School Robotics Activities

NX991595—\$9,764.95 Save \$513

LabVIEW™, MINDSTORMS®, and TETRIX® 12-Pack

- 12 MINDSTORMS® Education Base Sets with TETRIX®
- LabVIEW™ Education Edition (12 single licenses included in pack)
- Engineering with LabVIEW™: High School Robotics Activities

NX991596—\$11,603.95 Save \$630



Professional
Development
Available.
See pages 2-3.



ROBOTC®: Curriculum For LEGO® MINDSTORMS® Education with TETRIX®

The Robotics Academy introduces a feature-rich product designed to support teachers and students who use the TETRIX® building system with the MINDSTORMS® NXT Intelligent Brick and ROBOTC C-based programming language.

Lessons are included for LEGO® MINDSTORMS with and without the TETRIX building system. This enables teachers who use both in their classrooms to offer a variety of projects. The curriculum includes a combination of programming lessons for ROBOTC, engineering challenges, helper pages, and more than 300 pages of instructional materials in a PDF file to support students.

This product is a perfect complement for educators, students, and mentors who want to take their robotics aptitude to another level. It is especially useful to FTC teams because it combines the robust power and flexibility of ROBOTC with the dynamic possibilities of TETRIX with MINDSTORMS.

NX991542—\$395.95



ROBOTC® Programming For LEGO® MINDSTORMS® and TETRIX® Online Training

Online instruction for teachers, coaches, and FTC mentors!

The TETRIX® metal building system adds powerful and exciting functionality to LEGO® MINDSTORMS® NXT robots, but getting started can be quite a challenge. Taught by the Carnegie Mellon Robotics Academy's education staff, this six-week Web-based course is designed to support teachers and FTC mentors as they learn how to program using ROBOTC with TETRIX robots powered by the MINDSTORMS NXT Intelligent Brick. In addition, attendees will experience firsthand how robotic activities can be used to teach science, technology, engineering, and mathematics. The course features online access to archived courses and supplemental lessons from other Robotics Academy content, a copy of ROBOTC Curriculum for LEGO MINDSTORMS Education with TETRIX, and much more.

Developed and taught by Carnegie Mellon Robotics Academy, which teaches hundreds of robotics teachers every year and has experience with students of all ages. Schedule of classes is posted online at www.LEGOeducation.us/online/schedule. Class content is subject to revision.

NX991648—\$499

ROBOTC® with MINDSTORMS® and TETRIX® Value Packs

Get your students excited about computer programming, electronic-embedded systems, engineering design, mathematics, and much more with MINDSTORMS®, TETRIX® by Pitsco, and ROBOTC®.

ROBOTC®, MINDSTORMS®, and TETRIX® 4-Pack

- 4 MINDSTORMS® Education Base Sets with TETRIX®
- ROBOTC® Software (4 single licenses included in pack)
- ROBOTC®: Curriculum for LEGO® MINDSTORMS® Education with TETRIX®

NX991649—\$4,221.95 Save \$85

ROBOTC®, MINDSTORMS®, and TETRIX® 6-Pack

- 6 MINDSTORMS® Education Base Sets with TETRIX®
- ROBOTC® Software and 24-Seat License
- ROBOTC®: Curriculum for LEGO® MINDSTORMS® Education with TETRIX®

NX991667—\$6,029.95 Save \$153

ROBOTC®, MINDSTORMS®, and TETRIX® 8-Pack

- 8 MINDSTORMS® Education Base Sets with TETRIX®
- ROBOTC® Software and 24-Seat License
- ROBOTC®: Curriculum for LEGO® MINDSTORMS® Education with TETRIX®

NX991650—\$7,740.95 Save \$238

ROBOTC®, MINDSTORMS®, and TETRIX® 10-Pack

- 10 MINDSTORMS® Education Base Sets with TETRIX®
- ROBOTC® Software and 24-Seat License
- ROBOTC®: Curriculum for LEGO® MINDSTORMS® Education with TETRIX®

NX991663—\$9,482.95 Save \$292

ROBOTC®, MINDSTORMS®, and TETRIX® 12-Pack

- 12 MINDSTORMS® Education Base Sets with TETRIX®
- ROBOTC® Software and 24-Seat License
- ROBOTC®: Curriculum for LEGO® MINDSTORMS® Education with TETRIX®

NX991651—\$11,108.95 Save \$462

Explore Robotics!

Research Support Outreach Engineering Workshops



Center for Engineering
Education and Outreach

The Center for Engineering Education and Outreach (CEEEO) at Tufts University has been a leader in supporting efforts to integrate

engineering into K-12 education for more than 10 years. Informed by educational research, the CEEEO's outreach programs and educational technology developments utilize the engineering design process to improve students' excitement for learning in all subjects. The CEEEO's graduate students, staff, and faculty analyze real classroom data, develop hands-on activity units, and design effective educational tools all in an effort to achieve the goal of improving education through engineering. Examples of the CEEEO's educational products specific to LEGO® robotics include ROBOLAB™, LabVIEW™ Education Edition, and Intelligent Control Software and Activity Pack.

Get Started with Engineering Education

The CEEEO has multiple resources for educators to get started engaging in engineering education in their classrooms.

- LEGOengineering.com – This Web site is a premier resource for activities, online events, and support for educators using LEGO® Education Robotics products, including NXT-G, LVEE, ROBOLAB™, and the WeDo™ Software.
- LEGO Engineering Conferences – One-day hands-on networking event for teachers who use or plan to use LEGO MINDSTORMS® Education technologies to teach math and/or science in their classrooms.
- MAT in Engineering Education – Starting in fall 2011, the Tufts Department of Education, in cooperation with the CEEEO, will be offering a Master of Arts in Teaching in Engineering Education. For more information, visit ceeo.tufts.edu/engineeringeducation.
- CEEEO Research Report – The CEEEO Research Report is a biannual report that summarizes the Center's research findings for educators. Sign up for the report at ceeo.tufts.edu/researchreport.



Intelligent Control Software

The *Intelligent Control Software* is a stand-alone application that enables students to remotely control a LEGO® MINDSTORMS® NXT robot or a *TETRIX*® robot powered by the *NXT Intelligent Brick*. The application enables students to gather real-time sensor data through a graphical display on a computer, providing information about the robot's remote environment. Students can use a Logitech joystick controller with USB connection to the computer and uniquely assign joystick button functionality to control a *TETRIX* robot powered by the *NXT Intelligent Brick*. The application is capable of controlling the *TETRIX* DC motors and *NXT* motors, as well as reading values of the light, sound, and ultrasonic sensors. With all motor control and sensor readings performed over Bluetooth, this application enables students to have their robot explore an environment unseen from the base computer, thus simulating a real-world, remote-controlled robot mission! Requires Bluetooth connectivity. This software is Mac OS X, Windows XP, and Vista compatible.

NX739151—\$49.95

Intelligent Control Software and Site License

The site license allows for the installation of the software on all computers at a single school or institution.

NX739152—\$199.95

Intelligent Control Activity Pack

The *Intelligent Control Activity Pack* was designed around a robot built with the LEGO® MINDSTORMS® Education Set and *TETRIX*® metal building system in order to provide students with the confidence to quickly and easily control more complex robots. When used with the *Intelligent Control Software*, the *Intelligent Control Activity Pack* will engage your students by having them navigate their robot through various obstacle courses on a mat by making sense of the live sensor readings updating via Bluetooth on the graph computer display. The activity pack comes in a three-ring binder and includes four activities that provide a scaffold for students to familiarize themselves with joystick remote-controlled navigation of a robot, as well as understand a physical environment through only light and ultrasound sensor data. Each activity requires 15 minutes of teacher preparation time and one to two hours of implementation and offers open-ended extensions, enabling students to push the limits of both the robot and software application. A CD-ROM with a PDF of all the activities and worksheets is included. Computers with Bluetooth capability, the *TETRIX*® and MINDSTORMS® Education Starter Set, and *Intelligent Control Software* are all required for the activity pack and sold separately.

NX739153—\$139.95



Intelligent Control Pack

Your class will be interpreting live sensor readings in no time with the *Intelligent Control Pack*. This pack is also a perfect way to incorporate your *FIRST* Tech Challenge set into the classroom. Computers with Bluetooth capability, the *TETRIX*® and MINDSTORMS® Education Starter Set, and *Intelligent Control Software* are required and sold separately. Includes:

- *Intelligent Control Software and Site License*
- *Intelligent Control Activity Pack*
- 4' x 8' Activity Mat
- 4 Logitech Gaming Controllers

NX739155—\$499.95

NX739156 Intelligent Control Pack w/o Joysticks—\$379.95



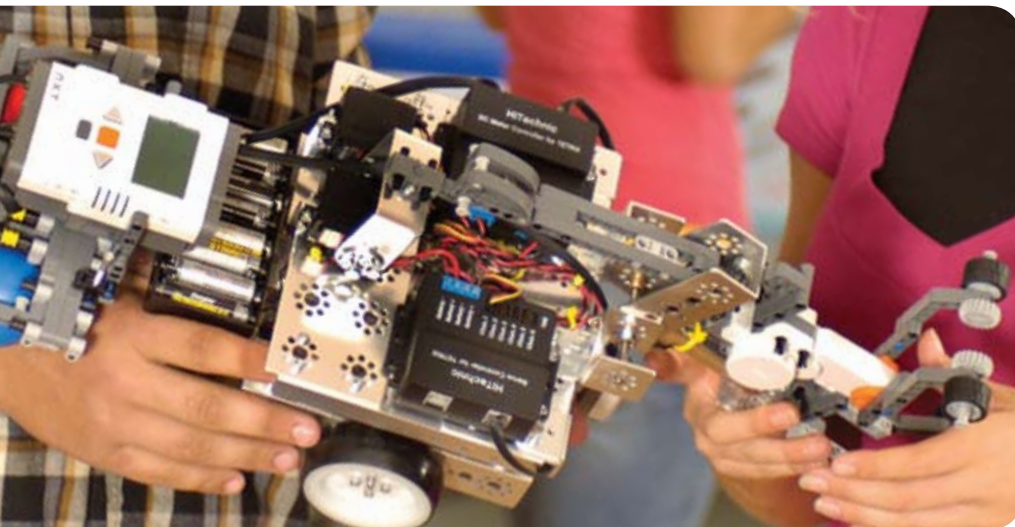
Don't have Bluetooth Capabilities?
Check out the *NXT Bluetooth Dongle*
on Page 37.



Logitech Gaming Controller

Use this USB game controller to create a remote control system for your *TETRIX*® robot.

NX739115—\$29.95



HiTechnic Sensor Multiplexer

The *HiTechnic Sensor Multiplexer* allows up to four sensors to be connected to one *NXT Intelligent Brick* sensor port. Use any combination of LEGO® and HiTechnic sensors to expand your robot's sensor capabilities. Connect more than one *HiTechnic Sensor Multiplexer* for more connectivity. Programming support for *LabVIEW™ Education Edition* and *ROBOTC®*. Ages 8+.

NX991560—\$57.95



HiTechnic Touch Sensor Multiplexer

The *HiTechnic Touch Sensor Multiplexer* enables you to connect up to four *NXT Touch Sensors* to a single *NXT Intelligent Brick* sensor port. The LEGO® MINDSTORMS® *Education Software* can read the state of each different touch sensor or the state of all of them with a single read command. The *Touch Sensor Multiplexer Block* is available for free download at www.LEGOeducation.us/hitechnic. Ages 8+.

NX991446—\$28.99



TETRIX® Motor Encoder Pack

When installed on the *TETRIX® DC Drive Motor*, the *TETRIX Motor Encoder Pack*, along with the *HiTechnic DC Motor Controller* interface, enables your robot to move a fixed distance, rotate to a specific position, move at a constant speed, reset encoders, and read coders using the LEGO® MINDSTORMS® *Education NXT Software*. The pack includes one *Motor Shaft Encoder*, one *Shaft Encoder Cable*, an improved encoder mount, and assembly instructions. Also compatible with *LabVIEW™* and *ROBOTC®*. Ages 14+.

NX738000—\$79.95

Shaft Encoder Cables

For connecting the *Motor Shaft Encoder* to the *HiTechnic DC Motor Controller*. Ages 14+.

NX739135 (pkg of 2)—\$34.95



NiMH Battery Pack Charger

Use this charger to charge our 12V *Battery Pack* (739057). This *NiMH Charger* auto-detects battery pack voltage, sets up proper charging voltage, and cuts off power automatically by negative delta V IC when battery pack is fully charged, protecting the battery from over current, short circuit, and reverse polarity. Ages 14+.

NX739059—\$34.95



HiTechnic DC Motor Controller

The *HiTechnic DC Motor Controller* for *TETRIX®* connects to an *NXT Intelligent Brick* sensor port and will enable you to control powerful DC gear motors for use with *TETRIX* robots. The controller has two H-bridge outputs to control the speed and direction of two DC gear motors and is designed to connect to the *TETRIX* hole pattern. A four-motor robot can also be built by paralleling two motors to one channel. A total of four *DC Motor Controllers* for *TETRIX* and/or *Servo Controllers* for *TETRIX* can be daisy-chained to provide additional motor and/or servo outputs on each port. Ages 14+.

NX991444—\$79.95



HiTechnic Servo Controller

The *HiTechnic Servo Motor Controller* for *TETRIX®* connects to an *NXT Intelligent Brick* sensor port and will enable you to control up to six R/C-type servo motors for use with *TETRIX* robots, enabling you to add proportional positioning to your robotic creations. A total of four *DC Motor Controllers* and/or *Servo Controllers* for *TETRIX* can be daisy-chained to provide additional motor and/or servo outputs on each port. Ages 14+.

NX991445—\$79.95



12V Rechargeable NiMH Battery Pack

Use this 10-cell, 12-volt, 3,000 mAh, NiMH pack with built-in 20-amp replaceable fuse for safety to power the *HiTechnic DC Motor* and *Servo Controllers*. Ages 14+.

NX739057—\$49.95



TETRIX® Tank Tread Kit

Tank treads distribute weight more evenly than wheels, giving robots the traction needed to cover rough terrain or unstable ground such as sand. They can also be used to create conveyor belts. This kit provides everything needed to create robots with up to 6.5 feet of tank tread. *TETRIX*® chain links are made of highly-durable Delrin® and snap together and apart with ease.

This high-value kit includes not only the tank tread parts, but also all of the extra *TETRIX* parts required to attach the treads to a robot, requiring no additional parts from the *TETRIX* Base Set. Includes the following *TETRIX* components: 200 Tank Tread Chain Links, six Tank Tread Idler Wheels, four 32 mm Channels, two Tank Tread Sprockets, 24 Bronze Bushings, twelve 1/8" Axle Spacers, 12 Axle Set Collars, and six 100 mm Axles. Ages 14+.

NX736468—\$99.95

TETRIX® Tank Tread Sprocket Pack

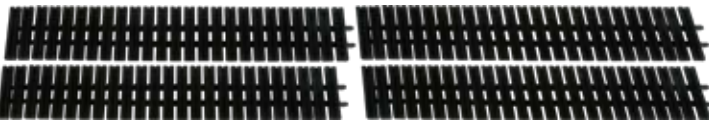
These sprockets are the drive system for tank treads. They can be attached to *TETRIX*® DC motors, motor hubs, and servos. Each sprocket has 20 teeth. Ages 14+.

NX736461 (pkg of 2)—\$10.95

TETRIX® Tank Tread Idler Wheel Pack

Providing rolling support for tank treads, these idler wheels can be used with standard *TETRIX*® parts. Ages 14+.

NX736462 (pkg of 2)—\$12.95



TETRIX® Tank Tread Chain Link Pack

When you need longer tank treads, this pack will provide the extra length with the same snap-together *TETRIX*® chain links as in the *Tank Tread Kit*. Package of 100 chain links creates up to 3.25 feet of tread. Ages 14+.

NX736460 (pkg of 100)—\$29.95



TETRIX® Conveyor Rubber Inserts Pack

Get extra grip with these rubber inserts – their T-shaped ends slide into the *TETRIX*® Tank Tread Chain Links for a secure fit. Ages 14+.

NX736464 (pkg of 50)—\$19.95

Colors and decorative designs may vary.

The *TETRIX*® Tank Tread Kit includes up to 6.5 feet of assembled tank tread.

TETRIX® Tank Tread Accessory Pack

Includes 24 Tread Conveyor Paddles and 50 Tread Rubber Inserts. Ages 14+.

NX739250—\$34.95



TETRIX® Conveyor Paddles Pack

Nylon paddles feature T-shaped ends that slide into the *TETRIX*® Tank Tread Chain Links to create conveyor-type mechanisms. With the *TETRIX* hole pattern, you can build scoops, levers, and other devices right on the paddles using standard *TETRIX* parts. Each paddle is 50 mm x 40 mm. Ages 14+.

NX736463—\$19.95



TETRIX® Channels

Heavy-duty aluminum channel pieces are the structural base for building with the *TETRIX*® building system. Comes in five different lengths for flexible building – also, pieces can be cut to custom lengths with a metal-cutting blade. Ages 14+.

NX739065 32 mm (pkg of 2)—\$11.95

NX739066 96 mm (pkg of 2)—\$13.95

NX739067 160 mm (pkg of 2)—\$17.95

NX739068 288 mm (pkg of 2)—\$29.95

NX739069 416 mm—\$19.95



TETRIX® Tubes

Light and strong, the *TETRIX*® Tubes can be used as long extensions. Made of heavy-duty aluminum, they come in three different sizes but can also be cut to custom lengths with a metal-cutting blade. Ages 14+.

NX739074 80 mm (pkg of 2)—\$3.95

NX739075 145 mm (pkg of 2)—\$6.95

NX739076 220 mm (pkg of 2)—\$9.95



TETRIX® Tube Plug Pack

Insert these precision-machined aluminum *TETRIX*® Tube Plugs into the end of *TETRIX* Tubes for reinforcement when applying a *TETRIX* Tube Clamp. Ages 14+.

NX739193 (pkg of 2)—\$2.95

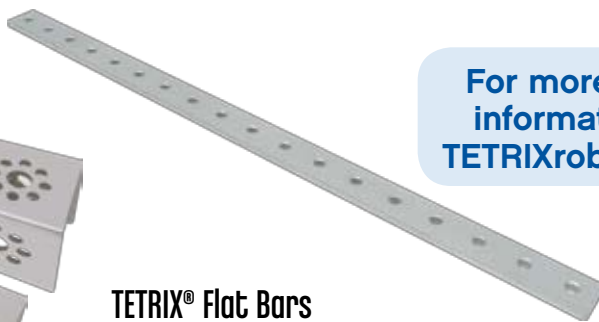


TETRIX® Angles

Structural pieces feature 90° angles and heavy-duty aluminum construction. Can be cut to custom lengths with a metal-cutting blade. Ages 14+.

NX739072 144 mm (pkg of 2)—\$12.95

NX739071 288 mm (pkg of 2)—\$15.95



For more *TETRIX*® information, visit TETRIXrobotics.com.

TETRIX® Flat Bars

These structural pieces are 288 mm long and made of heavy-duty aluminum. Can be cut to custom lengths with a metal-cutting blade. Ages 14+.

NX739070 (pkg of 2)—\$10.95



TETRIX® Flat Brackets

Perfect for connecting structural elements or for creating a servo leverage arm. Made of heavy-duty aluminum. Ages 14+.

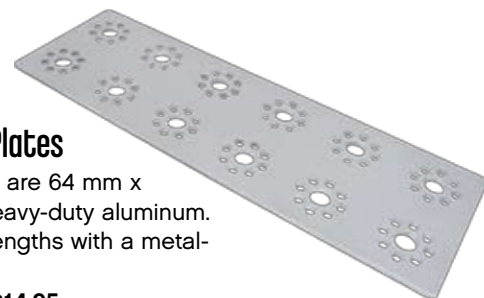
NX739061 (pkg of 2)—\$6.95



TETRIX® L Brackets

Brackets with 90° angles connect structural elements. Made of heavy-duty aluminum. Ages 14+.

NX739062 (pkg of 2)—\$5.95



TETRIX® Flat Building Plates

Flat Building Plates are 64 mm x 192 mm and made of heavy-duty aluminum. Can be cut to custom lengths with a metal-cutting blade. Ages 14+.

NX739073 (pkg of 2)—\$14.95

TETRIX® Single-Servo Motor Brackets

Heavy-duty aluminum brackets each hold one servo in place. Ages 14+.

NX739060 (pkg of 2)—\$10.95



TETRIX® Dual-Servo Motor Bracket

When you need double the power, this bracket does the trick. Use it to attach two motors side by side. Made of heavy-duty aluminum. Ages 14+.

NX739064—\$8.95



TETRIX® Servo Joint Pivot Brackets

Each bracket features a pivot bearing. Made of heavy-duty aluminum. Ages 14+.

NX739063 (pkg of 2)—\$11.95

**TETRIX® Axles**

Attach wheels and gears with these precision-ground axles. Ages 14+.

NX739088 (100 mm) (pkg of 6)—\$17.95

NX735871 (250 mm) (pkg of 3)—\$17.95

**TETRIX® Gear Hub Spacers**

Provides adequate spacing between wheels and gears. Includes four cap screws for each spacer. Ages 14+.

NX739090 (pkg of 2)—\$7.95

**TETRIX® Axle Hubs**

Used to attach gears and wheels to axles and axles to structural elements. Features heavy-duty aluminum construction. Ages 14+.

NX739172 (pkg of 2)—\$7.95

**TETRIX® Motor Shaft Hubs**

Attach wheels and gears to motor shafts with these hubs. Each hub comes with a screw and is made of heavy-duty aluminum. Ages 14+.

NX739079 (pkg of 2)—\$7.95

**TETRIX® Axle Set Collars**

Axle Set Collars lock a rotating axle to secure the horizontal alignment. Ages 14+.

NX739092 (pkg of 6)—\$3.95

**TETRIX® Bronze Bushings**

Bronze axle bushings are greased to reduce friction. Ages 14+.

NX739091 (pkg of 12)—\$15.95

**TETRIX® Axle Spacers**

These spacers are handy when you need a little space between wheels, gears, and other elements on axles. Ages 14+.

NX739100 1/8" (pkg of 12)—\$1.95

NX739101 3/8" (pkg of 6)—\$9.95

**TETRIX® Gears**

TETRIX® Gears are a step above kits and systems with plastic gears – these are made of heavy-duty aluminum and really stand up to wear and tear. Three sizes available. Ages 14+.

NX739028 40 tooth (pkg of 2)—\$24.95

NX739086 80 tooth—\$19.95

NX739085 120 tooth—\$29.95

TETRIX® Gear Pack

Get all three sizes of the *TETRIX® Gears* in this one pack. Includes:

- Four 40-tooth gears
- Two 80-tooth gears
- Two 120-tooth gears

Ages 14+.

NX731901—\$99.95

TETRIX® Wheel

Add some mobility to your *TETRIX®* robot with these wheels that come in two sizes. Ages 14+.

NX739025 (3")—\$19.95

NX739055 (4")—\$24.95

**TETRIX® Omni Wheels**

With the use of 10 rollers, these wheels have the ability to drive forward and laterally. Ages 14+.

NX731132 TETRIX® 3" Omni Wheels (pkg of 2)—\$29.95

NX736466 TETRIX® 4" Omni Wheels (pkg of 2)—\$34.95

**TETRIX® Tube Clamps**

Used to bolt *TETRIX® Tubes* to structural elements, these *Tube Clamps* feature heavy-duty aluminum construction. Ages 14+.

NX739077 (pkg of 2)—\$7.95

**TETRIX® Stand-Off Posts**

Hex stand-off posts; female/female, 6-32. Ages 14+.

NX739102 1" (pkg of 12)—\$3.95

NX739103 2" (pkg of 12)—\$8.95

Socket Head Cap Screws



These 6-32 *Socket Head Cap Screws* connect your robot design. Requires hex keys, sold separately, to tighten and loosen the screws. Ages 14+.

NX739195 1-1/2" (pkg of 20)—\$7.95
NX739194 1-1/4" (pkg of 20)—\$8.95
NX739097 1/2" (pkg of 100)—\$10.95
NX739098 5/16" (pkg of 100)—\$11.95



Button Head Cap Screws

These 6-32 screws feature a low-profile head – great for areas where moving parts are close to the screw heads. Requires hex keys, sold separately, to tighten and loosen the screws. Ages 14+.

NX739111 3/8" (pkg of 50)—\$8.95

Kep Nuts



Kep Nuts feature a star washer that locks down on the heavy-duty aluminum structural elements for added strength to any *TETRIX*® robot design. Ages 14+.

NX739094 (pkg of 100)—\$2.95

Pivot Bearing

Replacement pivot bearing for the *Servo Joint Pivot Bracket*. Ages 14+.

NX739093—\$2.95



Motor Mount

Attaches the *DC Drive Motor* to your robot. Includes the *Motor Mount*, two *kep nuts*, and two *cap screws*. Ages 14+.

NX739089—\$19.95



TETRIX® DC Drive Motor

12-volt DC motor features 152 rpm and 300 oz-in. of torque. Ages 14+.

NX739083—\$29.95



Servo Y Connector

For connecting two servos to one channel. Ages 14+.

NX739082—\$2.95



Servo Extension

Give your servo a little more room to roam with this extension. Ages 14+.

NX739081—\$1.95



On/Off Switch

Controls the power from the battery pack. Ages 14+.

NX739129—\$6.95



Switch Mounting Bracket



The *Switch Mounting Bracket* is made of black acrylic and enables the *On/Off Switch* to be easily mounted onto *TETRIX*® components. Ages 14+.

NX739176—\$2.95



Battery Holder

Holds eight AA batteries. Ages 14+.

NX739136—\$3.95



Motor Power Cable

For use with the *DC Drive Motor*. Ages 14+.

NX731903—\$1.95
NX736465 TETRIX® Thermal-Protected DC Motor Power Cable—\$12.95

180° Servo

Standard rotational range is 90 degrees, but this servo can be operated to 180 degrees with controllers capable of generating a pulse range from 600 usec to 2400 usec. Ages 14+.

NX739080—\$24.95



TETRIX® Continuous Rotation Servo



Featuring fully proportional forward and reverse speed control, this servo enables precise movements of robot designs. Unlike other servos that have a limited range of motion, this servo rotates continuously in either direction – as needed for wheels. This high-quality servo is designed with a wide neutral dead band to eliminate the “creep” that occurs in many other continuous rotation servos. Dual ball bearings on the output shaft ensure long-lasting performance. **Note:** This servo does not have position feedback. Ages 14+.

NX739177—\$26.95



HiTec Servo Horn

Forget those plastic servo horns! This heavy-duty aluminum servo horn lends extra strength to your servo applications. Ages 14+.

NX739020—\$5.95



Zip Tie Pack

11" flexible nylon cable ties. Ages 14+.

NX731902 (pkg of 12)—\$2.95



TETRIX® 32-Tooth Sprockets

Show your power with *TETRIX*® sprockets made from heavy-duty aluminum for maximum performance under heavy loads. *TETRIX 32-Tooth Sprockets* are designed to work with the 0.250" *TETRIX* steel chain. Ages 14+.

NX739171 (pkg of 2)—\$34.95



TETRIX® 24-Tooth Sprockets

Show your power with *TETRIX*® sprockets made from heavy-duty aluminum for maximum performance under heavy loads. *TETRIX 24-Tooth Sprockets* are designed to work with the 0.250" *TETRIX* steel chain. Ages 14+.

NX739169 (pkg of 2)—\$24.95



TETRIX® 16-Tooth Sprockets

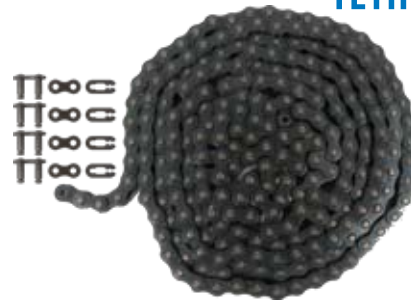
Show your power with *TETRIX*® sprockets made from heavy-duty aluminum for maximum performance under heavy loads. *TETRIX 16-Tooth Sprockets* are designed to work with the 0.250" *TETRIX* steel chain. Ages 14+.

NX739165—\$18.95

Chain Breaker Tool

With the *Chain Breaker*, quickly and easily change the length of the 0.250" *TETRIX*® *Chain with Links*. Simply measure the length you need for your application, position the chain in the breaker block, and turn the side-mounted screw to remove a chain-linking pin. A connecting link (included in the *TETRIX Chain with Links* pack) is used to reconnect the chain. This unit is a must if you are planning on changing lengths often. Ages 14+.

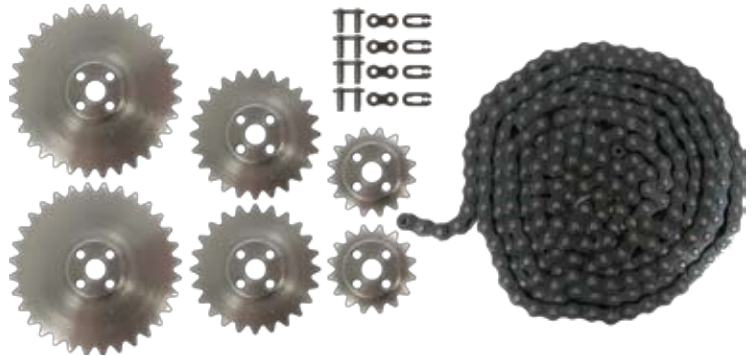
NX739217—\$16.95



TETRIX® Chain with Links

TETRIX® *Chain with Links* is made to work with all ratios of *TETRIX* sprockets. The chain pack includes five feet of 0.250" steel chain and four master connecting links. *TETRIX* chain can easily be cut to custom lengths using the *Chain Breaker Tool*, sold separately. Ages 14+.

NX739173—\$14.95



TETRIX® Sprockets and Chain Pack

Get all of the *TETRIX*® *Sprockets* and *Chain with Links* in one package. Made from heavy-duty aluminum for maximum performance under heavy loads, *TETRIX* chain is a 0.250" steel chain packaged in five-foot lengths and includes four master links. Ages 14+.

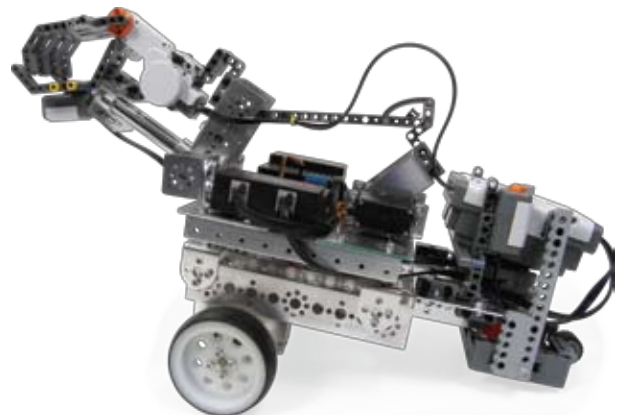
NX739174 (pkg of 2)—\$79.95



Balldriver Hex Keys

These hex keys feature the ProHold tip to make screwing and unscrewing faster and easier – even when the screw is at an awkward angle. Made of high-torque steel. Comes in the following inch sizes: .050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, and 5/32. Ages 14+.

NX735859—\$11.95





Brutus Specs

- Axes: 6
- Base: 6" height x 12" diameter
- Base rotation: 90°
- Max horizontal reach: 25"
- Max vertical reach: 35"
- Max gripper width: 3"

Brutus Robotic Arm

An industrial-strength robotic arm that executes commands with delicate precision yet is rugged enough to withstand years of student use. A simple Windows computer program (included) enables a PC to control *Brutus*. The teach pendant feature will remember movements and repeat an entire sequence automatically at your command.

Brutus' unique "even-grip" pincers grasp objects up to 3" wide without pushing them away. Rugged aluminum and ABS plastic make up *Brutus*' base and arm components. Powerful motors and servos drive the arm via a system of cogged belts and pulleys. You'll find no wimpy, easily stripped plastic gears on this brute! Shipped completely assembled and includes WIN 2000/XP-compatible software and all computer interface hardware and connections. Requires one available serial port.

Level: Middle School-High School

NX754533—\$3,495



Rooster R/C Robot

This radio-controlled robot is really something to crow about! It's a highly mobile and maneuverable device for manipulating and transporting objects.

The Rooster is the tool for giving students a dynamic, hands-on robotic experience! Rugged construction ensures that the Rooster will withstand continuous student use.

Includes a radio transmitter, integrated rechargeable battery pack, charger, detailed instructions, and exciting robotic activities. Robot base dimensions: 8" wide and 7-1/2" long. Maximum gripper height is 9".

Level: Middle School-High School

NX717273—\$795



T-Bot II – Getting Started Package

Combine lessons in teamwork, robotics, hydraulics, and simple machines with this convenient package. It brings together everything needed for your classroom of 20 to 40 students working in teams of two or four to get a grip on the hydraulic robot arm activity.

Students work together to build the robotic arm and then develop some serious teamwork to operate its hydraulic controls.

The *T-Bot II – GS Package* includes the following products:

- T-Bot II Hydraulic Arm 10-Pack
- T-Bot II Video (DVD)
- HD Bond II

NX734111 T-Bot II – Getting Started Package—\$370
Middle School-High School

T-Bot II Hydraulic Arm

The *T-Bot II* is a great project for illustrating hydraulic power and mechanics. See how syringes, tubes, and water work together to power the parts of this robotic arm. Each control moves one of the *T-Bot II*'s axes. The four controls can be used one at a time or all at once by a team of students – they can try basic maneuvers or moving objects as a team-building exercise!

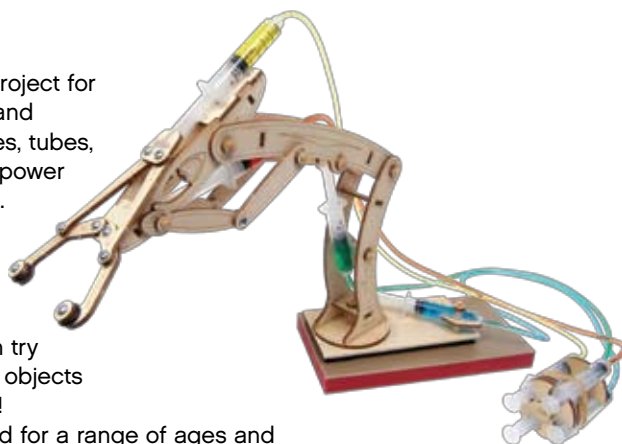
The *T-Bot II* can be used for a range of ages and educational concepts – from showing third graders how to work together to helping college students explore load and effort forces.

Pack includes enough material to build 10 *T-Bot II*s.

Level: Middle School-High School

NX734110—\$39.95

NX734245 10-Pack—\$379.50



6 CC Syringe For Hydraulics

Syringes are an excellent way to incorporate hydraulic or pneumatic power into your machine! Connected with tubing, syringes can activate arms, levers, grippers, and more. By combining large and small syringes in the same system, you gain mechanical advantage.

NX750973—\$.50

10 or more—\$.45 each

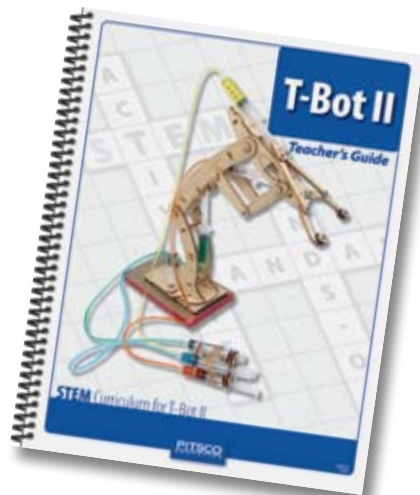
Colors and decorative designs may vary.



Assorted Food Coloring

Add food coloring to water in the *T-Bot II* to help you see which syringe powers which part of the robot arm. Pack includes one of each: red, yellow, blue, and green – each in a .25-ounce dropper bottle.

NX756736—\$4.25



T-Bot II Teacher's Guide

Pitsco's *T-Bot II* hydraulic robot arm delights students, and this guide will delight teachers. The *T-Bot II* guide overflows with lessons covering the Cartesian coordinate system, simple machines, basic programming, mechanical advantage, electromagnetism, teamwork, and more! Paperback/spiral-bound, 105 pages.

Level: Middle School-High School

NX759727—\$24.95

T-Bot II Video

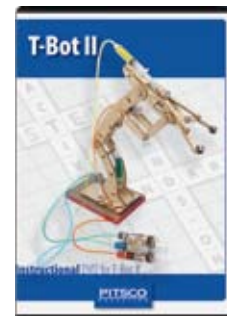
The Pitsco *T-Bot II* is a great project for demonstrating hydraulic power, simple machines, and basic robotics. But building the laser-cut kit is

a detailed procedure; this video will smooth the path for your students to succeed in building their *T-Bot II*.

Along with easing the building process, the program explains some of the science and mechanics of this fun class project. Closed-captioned. Time: 38 minutes.

Level: Middle School-High School

NX734122 DVD—\$24.95



Flexible Tubing

Transmits energy from one syringe to another. 1/8" inside diameter.

NX750972—\$12



Motorize Your Classroom!

Machines
Mechanisms
Science
Wheels
Gears
Friction
Measure
Predict

Machines and Mechanisms

Simple and Motorized Mechanisms solutions from LEGO® Education introduce students to simple machine concepts that better help them understand the mechanical aspects of building robots. With these sets, students master the LEGO Technic building system as they design, build, and test simple and motorized machines. The *Simple and Motorized Mechanisms Base Set* is the core building set for cross-curricular activity packs and add-on sets that allow students to explore firsthand design, science, technology, engineering, math, pneumatics, renewable energy, and much more.

Inspire your students to build and explore the future!

Let's Create Tomorrow!

 www.LEGOspace.com





Sets



Activities



Learning Targets

Science

- Communicate changes in movements of objects resulting from action
- Observe, predict, and record
- Learn about gravity, friction, and air resistance
- Measure forces and identify their decisions

Technology

- Recognize characteristics of familiar things
- Find out how mechanisms can be used to move things
- Learn about mechanical and pneumatic control systems

Creative Development

- Explore ideas
- Design and make things for different purposes

Mathematics

- Learn about shape and space through practical activities
- Problem solving, reasoning
- Fractions, percentages, and number operations

Tower Crane

SAMPLE ACTIVITY

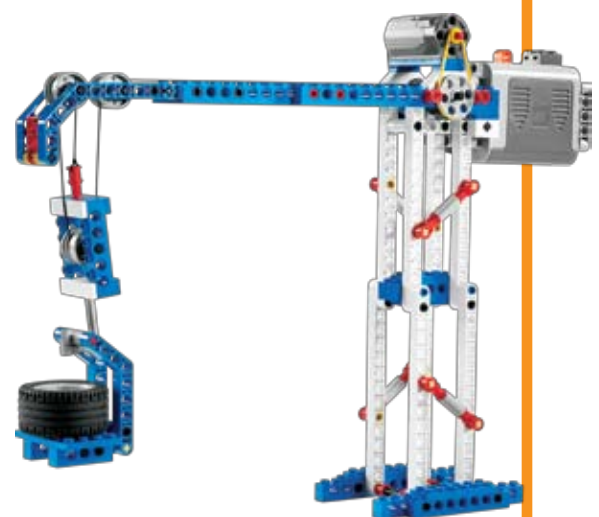
Objective: Students will build a model Tower Crane and investigate how its function is influenced by changes to the pulley systems.

Students will:

- Experiment and measure the effect of force on an object.
- Construct simple machines.
- Describe and explain parts of a structure and the effects of loads.
- Select and apply techniques and tools to accurately measure length with appropriate levels of precision.

Extensions:

- Investigate how the tower can be redesigned to lift objects higher and then design a test based on findings.
- Investigate how the tower can lift heavier loads and then design a test based on your findings.
- Investigate how the tower can lift loads faster and then design a test based on your findings.





education

Early Simple Machines



Professional
Development
Available.
See pages 2-3.



Early Simple Machines Set III

With this updated version of the *Early Simple Machines* Set, young students build fun and simple models like a seesaw, rolling vehicle, spinning top, raft, and many more. By playing with and manipulating the models, they experience pulleys, levers, gears, and wheels and axles, while exploring energy, buoyancy, and balance. The set is designed for use by teams of two or three children. It includes full-color activity cards with pictorial instructions for eight models; a plastic punch-out sheet with eyes, sails, scales, and wings; and a plastic bin for easy cleanup and storage. Use with the *Early Simple Machines III Teacher's Guide*. Ages 5+.

NX779656—\$116.95

A
\$1,434.95
value!

Early Simple Machines – Getting Started Package

This Getting Started package contains enough materials for 24 students working in pairs to explore pulleys, levers, gears, wheels and axles, and much more! The package includes:

- 12 Early Simple Machines Set III
- Early Simple Machines III Activity Pack

**NX991429 Early Simple Machines –
Getting Started Package—\$1,365.95**



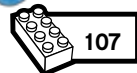
**NX991799 Early Simple Machines –
Getting Started Package with Professional
Development—\$3,165.95**

Ages 5+

Early Simple Machines III Activity Pack

Designed for the 779656 *Early Simple Machines Set III*, this activity pack includes eight engaging 45-minute lessons, each with extension activities of up to 20 minutes, and four additional open-ended problem-solving activities. The activities are designed to enable students to explore, investigate, and solve tasks related to mechanical principles, as well as learn about energy, balance, buoyancy, and much more. Ages 5+.

NX209656—\$30.95



Early Structures Set

Students learn basic structures concepts with hands-on exploration! Concepts include balance within structures, ways of building structures, and stability. By building a variety of models, children can determine what is the best shape for the job. It's ideal for developing design and problem-solving skills. The set is designed for use by teams of two to three children. In addition to the elements, it includes teacher notes with support for 16 activities, 14 investigation and problem-solving cards, and an inventory list. Ages 5+.

NX779660—\$96.95



Simple and Motorized Mechanisms Base Set

As students progress from LEGO® Education WeDo™ Robotics to LEGO MINDSTORMS®, the *Simple and Motorized Mechanisms Set* is a great bridge that helps students learn more advanced mechanical concepts while mastering the LEGO Technic building system. With this core brick set, students will build and explore machines and mechanisms, investigate motorized machines, calibrate and capture wind, and study gearing mechanisms, all of which are essential concepts important when building a robot. The set contains 396 LEGO Technic elements and full-color building instruction booklets for 10 principle models and 18 main models, all in a sturdy storage bin that includes a sorting tray. Combine the *Simple and Motorized Mechanisms Set* with curricular-relevant activity packs and the *Pneumatics* and *Energy Add-On Sets* to carry out a broad range of activities within design technology, science, mathematics, and renewable energy. Ages 8+.

NX779686—\$136.95

NX991756 2-Pack—\$269.95 Save \$3

NX991518 4-Pack—\$536.95 Save \$10

NX991757 6-Pack—\$800.95 Save \$20

NX991519 8-Pack—\$1,062.95 Save \$32

NX991758 10-Pack—\$1,321.95 Save \$47

NX991759 12-Pack—\$1,577.95 Save \$65

See page 60
for Getting
Started
Packages.

Introducing Simple and Motorized Mechanisms Activity Pack

When used with the *Simple and Motorized Mechanisms Base Set*, this activity pack gives students a fundamental understanding of simple machines, structures, and mechanisms. Students will investigate the principles of simple machines, mechanisms, and structures; experiment with balanced and unbalanced forces and friction; measure distance, time, speed, and weight; and much more. The activity pack comes in a three-ring binder and provides 30 lessons featuring 37 principle model activities; 14 main activities, each with extension activities; and six problem-solving activities. Also included is a CD-ROM with teacher's notes, student worksheets, and glossary. Ages 8+.

NX209686—\$119.95

Advancing with Simple and Motorized Mechanisms Activity Pack

After students have mastered the basics of simple machines, structures, and mechanisms, they are ready to advance with this activity pack. The activity pack comes in a three-ring binder and provides 20 lessons featuring 38 principle model activities; four main activities, including extension activities; and eight problem-solving activities designed to give students a more in-depth understanding of simple machines, mechanisms, structures, and mechanical advantage. Also included is a CD-ROM with teacher's notes, student worksheets, and glossary. Ages 8+.

NX209687—\$65.95

Colors and decorative designs may vary.

LEGOeducation.us





education

Simple and Motorized Mechanisms



A
\$1,763.35
value!

Professional
Development
Available.
See pages 2-3.



A
\$1,685.35
value!

Professional
Development
Available.
See pages 2-3.



Introducing Simple and Motorized Mechanisms – Getting Started Package

This Getting Started package comes with everything needed to introduce your students to simple and motorized mechanisms. Designed for 24 students working in pairs, this package includes:

- 12 Simple and Motorized Mechanisms Base Sets
- Introducing Simple and Motorized Mechanisms Activity Pack

NX991516 Introducing Simple and Motorized Mechanisms – Getting Started Package—\$1,690.95



NX991793 Introducing Simple and Motorized Mechanisms – Getting Started Package

with Professional Development—\$3,490.95

Ages 8+

Advancing with Simple and Motorized Mechanisms – Getting Started Package

This Getting Started package has everything for a classroom of 24 students working in pairs to explore simple and motorized machines in depth. This package includes:

- 12 Simple and Motorized Mechanisms Base Sets
- Advancing with Simple and Motorized Mechanisms Activity Pack

NX991517 Advancing with Simple and Motorized Mechanisms – Getting Started Package—\$1,639.95



NX991794 Advancing with Simple and Motorized Mechanisms – Getting Started Package with Professional Development—\$3,439.95

Ages 8+

Science and Math for Technology

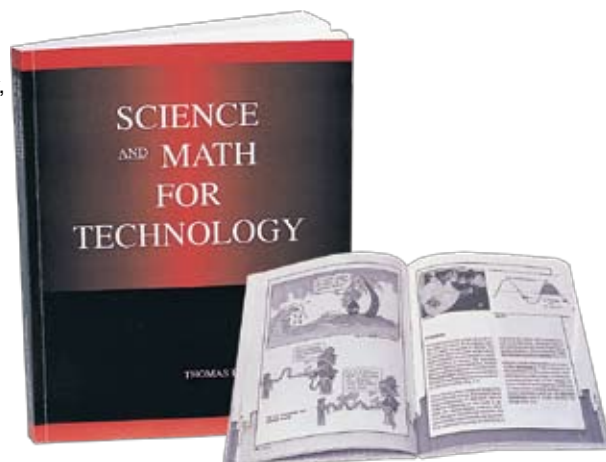
Knowing where to get the information you need is half the battle in problem solving. But, when you need to apply a physical science concept or solve a technology problem, where do you begin? With *Science and Math for Technology*, that's where! An indispensable book for students and teachers, *Science and Math for Technology* organizes information by topic – 12 of them in all, including electricity, motion, power transmission, liquid, gases, and biotechnology – and includes an extensive cross-referenced index, so beginning and advanced students can find the information they need in a hurry. Science concepts and math formulas are explained in easy-to-understand text that is complemented by photographs and unusually descriptive drawings and cartoons.

Whether it is used by an elementary student learning how to conduct research or an advanced student brushing up on a hazy concept, *Science and Math for Technology* is essential for meeting new standards in science, math, and technology education. Paperback, 241 pages.

Level: Early Learning-High School

NX757918—\$21.95

24 or more—\$20.60 each





Power Functions Battery Box

Can power two *XL-Motors* or four *M-Motors* at the same time. Requires 6 AA (1.5V) batteries, sold separately. Ages 7+.

NX778881—\$6.99



Power Functions Rechargeable Battery Box

This rechargeable battery box has built-in lithium polymer batteries for low weight and maximum power. Use it in your LEGO® Power Functions models and never have to use disposable batteries again! Ages 7+.

NX778878—\$50.95



Power Functions Extension Wire 20"

Build your Power Functions-equipped models bigger, better, and more mechanized and motorized than ever before by adding this 20-inch extension wire! Ages 7+.

NX778871—\$4.95



Power Functions M-Motor

Use the *Power Functions M-Motor* with the new power function connector to bring your LEGO® models to life. The *Power Functions M-Motor* is compatible with both LEGO building systems and can be used with the LEGO Education *WeDo™ Robotics Construction Set* and the *Simple and Motorized Mechanisms Set*. Ages 7+.

NX978883—\$7.95



Power Functions XL-Motor

Use the *XL-Motor* to animate larger builds. Requires *Power Functions Battery Box* (778881), sold separately. Ages 7+.

NX778882—\$10.95



Power Functions IR Receiver

Add remote-control functionality when you combine the *Power Functions IR Receiver* with the *Power Functions IR Speed Remote Control* (778879) or *Power Functions IR Remote Control* (778885), each sold separately. The *Power Functions IR Receiver* has two outputs that connect up to two different Power Functions. Requires the *Power Functions Battery Box* (778881) or the *Power Functions Rechargeable Battery Box* (778878), sold separately. Ages 7+.

NX778884—\$14.99



Power Functions IR Speed Remote Control

The *Power Functions IR Speed Remote Control* features four RC channels, two stop buttons, and two direction-control switches. Use with *Power Functions IR Receiver*, *Power Functions Battery Box*, and *Power Functions Motors*, each sold separately. Requires 3 AAA (1.5V) batteries, sold separately. Ages 7+.

NX778879—\$12.99

E-Motor

The *E-Motor* is a 9V motor with an internal gearbox. Its 9.5:1 gearing ratio provides a maximum torque of 4.5 Ncm and approximately 800 rotations per minute without load. It also functions as a very efficient generator. Ages 7+.

NX979670—\$16.95



Power Functions Extension Wire 8"

Power up your LEGO® Power Functions creations with this 8" extension wire. Enables you to connect your LEGO 9V electric systems to the new Power Functions system. Ages 7+.

NX778886—\$3.95

Colors and decorative designs may vary.



Power Functions Light

Is supported by LEGO® Education *WeDo™ Robotics Software v1.2* and *Activity Pack*. Now you can add bright LED lights to your models to create glowing eyes, illuminated headlights, and much more! Ages 7+.

NX778870—\$6.95



Power Functions IR Remote Control

The *Power Functions IR Remote Control* operates on four different channels, enabling four models to be controlled at the same time. Requires the *Power Functions IR Receiver* (778884) and 3 AAA (1.5V) batteries, sold separately. Ages 7+.

NX778885—\$9.49



education

Renewable Energy Add-On



Renewable Energy Add-On Set

The *Renewable Energy Add-On Set* is designed as an addition to the *Simple and Motorized Mechanisms Set*, the core set in our *Machines & Mechanisms* range. When the *Renewable Energy Add-On Set* is combined with the customized activity pack, students will explore renewable energy sources; investigate energy supply, transfer, accumulation, conversion, and consumption; and use measurements and data analysis to describe and explain outcomes through hands-on activities and exciting, real-life models.

Extend the use of the *Add-On Set* by combining it with the LEGO® MINDSTORMS® Education range. Students will experiment using energy from their own bodies and the three main energy sources – solar, wind, and water – to generate, store, and use power. When connected to the *NXT Brick*, the unique elements of the *Renewable Energy Add-On Set* (solar panel, generator, and LEGO *Energy Meter*) work as sensors. Ages 8+.

NX779688—\$99.95

NX991714 2-Pack—\$196.95 Save \$2

NX991715 4-Pack—\$391.95 Save \$7

NX991716 6-Pack—\$584.95 Save \$14

NX991717 8-Pack—\$775.95 Save \$23

NX991718 10-Pack—\$964.95 Save \$34

NX991719 12-Pack—\$1,151.95 Save \$47



Renewable Energy Activity Pack

The *Renewable Energy Activity Pack* comes on a CD-ROM and includes six 45-minute lessons and four problem-solving activities that enable students to explore renewable energy sources; investigate energy supply, transfer, accumulation, conversion, and consumption; and use measurements and data analysis to describe and explain outcomes. Also includes a wide range of real-life images, teacher's notes, student worksheets, and glossary. Ages 8+.

NX209688—\$65.95

Renewable Energy Add-On Value Pack

This pack is designed for those who already have a classroom supply of *Simple and Motorized Mechanisms* or LEGO® MINDSTORMS® Education sets and are ready to incorporate green learning into their classroom. This pack includes:

- 12 Renewable Energy Add-On Sets
- Renewable Energy Activity Pack

Ages 8+.

NX991713—\$1,215.95

Solar Panel

The LEGO® *Solar Panel* provides sufficient power to operate the LEGO *Energy Meter* and motors. It delivers 5V, 4mA in direct light from a 60W incandescent bulb positioned 25 cm from the solar panel (2000 lux). Ages 8+.

NX979667—\$39.95



Energy Display

This element displays energy storage level in joules and input and output in volts, watts, and amps. Combine with 979669 *Energy Storage* to form the LEGO® *Energy Meter*. Ages 8+.

NX979668—\$49.95



Energy Storage

This NiMH battery with connector is designed to be combined with the 979668 *Energy Display*. When combined, the two elements form the LEGO® *Energy Meter*. Storage capacity: 150 mAh. Ages 8+.

NX979669—\$16.95





Pneumatics Add-On Set

The *Pneumatics Add-On Set* is part of a complete package. Combining the set with the *Simple and Motorized Mechanisms Set* enables you to carry out engaging cross-curricular activities. Your students will explore power systems and components, sequence and control, pressure, prototyping, kinetic and potential energy, and much more. The set and corresponding *Pneumatics Activity Pack* feature 14 principle model activities that introduce students to the basics of pneumatics. In addition, four main models and activities and two additional open-ended problem-solving activities thoroughly educate students about pneumatics. The set features 31 specialty elements, including pumps, cylinders, valves, an air tank, tubes, and a manometer. Ages 10+.

NX979641—\$55.95

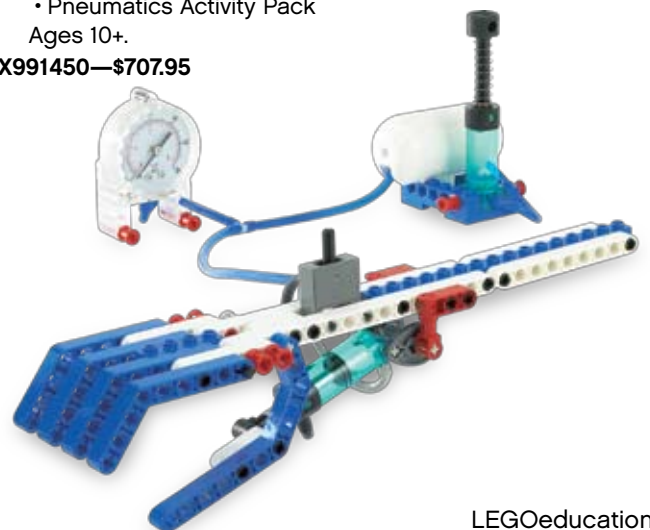
Pneumatics Add-On Value Pack

This set is designed for those who already have the *Motorized Mechanisms Getting Started Package* and are ready to dive into pneumatics. The pack includes:

- 12 Pneumatics Add-On Sets
- Pneumatics Activity Pack

Ages 10+.

NX991450—\$707.95



Pneumatics Activity Pack

The *Pneumatics Activity Pack* comes on a CD-ROM and includes 14 principle model activities, four 45-minute pneumatics lessons each with extension activities, and two additional problem-solving tasks. Also includes video clips of real-life machines, printable worksheets, and teacher materials. This activity pack is appropriate for fifth grade and up. Ages 10+.

NX209641—\$65.95

Colors and decorative designs may vary.

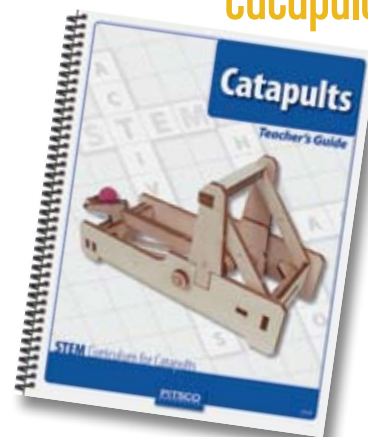
LEGOeducation.us

PITSCO
EDUCATION

A
\$303.15
value!



A
\$278.50
value!



Catapults – Getting Started Package

Alexander the Great used catapults. Richard the Lionheart used them. Now you can use the *Catapult Kit* to overthrow lackluster activities in the classroom!

This Getting Started package provides enough materials for 30 students to build and experiment with their own rubber band-powered catapults. Students discover the effects of various load masses and different rubber bands as they also learn about tension, forces, data graphing, and other concepts. Requires white glue, sold separately.

The *Catapults – GS Package* includes the following products:

- Catapult 30-Pack
- Siege Machines Book
- HD Bond II (6 two-ounce bottles included)
- Glue Applicator Tip (6 tips included)
- Catapult Video (DVD)

NX735630 Catapults – Getting Started Package—\$255
Middle School-High School

Catapult

Feeling some tension? Perfect! For the medieval catapult, stored tension equals the power of projectile motion – which now equals awesome learning power!

Build and use this snappy kit to demonstrate:

- Forces and motion
- Vectors
- Trajectory
- Potential and kinetic energy
- Simple machines
- Medieval history

Plus, students can further develop math, physics, and problem-solving skills by experimenting with the catapult to reach different distances with varying weights of ammunition (pieces of clay). Going back to the Dark Ages has never been so enlightening! Clay included.

Level: Middle School-High School

NX759468 Kit—\$10.95

NX735629 10-Pack—\$83.95

NX735628 30-Pack—\$230

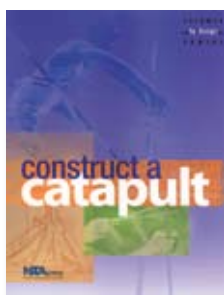
Construct a Catapult

Construct a Catapult integrates history, physics, mathematics, and technology as students design and build a working catapult. Students investigate elasticity and projectile launching and learn about frequency distribution while working through the process. Paperback, 96 pages.

Level: Intermediate-Middle School

NX757630—\$26.75

Colors and decorative designs may vary.



Catapults Teacher's Guide

Blow the dust off the historical catapult – because this flinging device is loaded and ready to deliver educational content to your classroom! This guide throws itself into subjects such as Newton's laws, projectile motion, simple machines, speed, and mass – all while your students build and test the fun catapult. Paperback/spiral-bound, 99 pages.

Level: Middle School-High School

NX991325—\$24.95

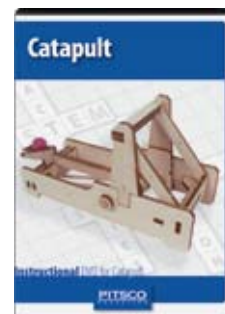
Catapult Video

With Pitco's *Catapult* activity, tension should be in the rubber band – not in your classroom! So make building this kit a fun fling with the *Catapult* video.

Follow along with the step-by-step instructions that will have your students' catapults built and operating in no time. Along the way, students learn about torsion and other types of energy, laws of physics, projectile motion, and the history of siege machines. Closed-captioned. Time: 18 minutes.

Level: Middle School-High School

NX733030 DVD—\$24.95



Siege Machines

From *Monty Python and the Quest for the Holy Grail* to *The Lord of the Rings*, we are fascinated by siege machines used in medieval times. Now, tap into that fascination to teach students math, science, and problem solving. This book details the history of the siege machines and then focuses on the math and science required to build and use catapults and trebuchets. Includes national standards met by the book's activities. Paperback/spiral-bound, 32 pages.

Level: Middle School-High School

NX759466—\$3.95





education

Mousetrap Vehicles



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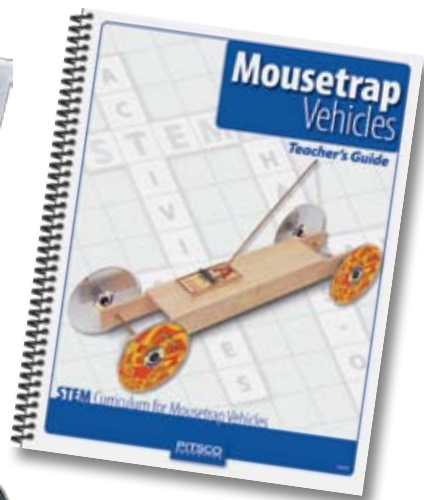
Mousetrap Vehicles – Getting Started Package

This package provides an easy way for 30 students to get the mousetrap vehicle activity rolling in your classroom. Students experience simple machines and other physics principles through the design and construction of a vehicle powered only by an ordinary mousetrap. Requires ruler, hobby knife, wire cutter, and a drill or Dremel tool, sold separately.

The *Mousetrap Vehicles – GS Package* includes the following products:

- Mousetrap Car 30-Pack
- Torsion Wheel
- Tubing Cutter
- Insta-Cure+ Glue
- Dry Powder Graphite
- Mousetrap Vehicle Video (DVD)

NX723614 Mousetrap Vehicles – Getting Started Package—\$379
Middle School-High School



Mousetrap Vehicles Teacher's Guide

Examine, alter, design, and experiment with mousetrap vehicles to understand velocity, potential and kinetic energy, acceleration, speed, circumference, distance – there's more potential in this guide than just potential energy!

The *Mousetrap Vehicles Teacher's Guide* contains NSTA, NCTM, and ITEEA standards addressed; teacher and student instructions for a variety of math, science, and technology activities; pretests and posttests; resource pages; and puzzles. Contains separate activities for middle school and high school students. Paperback/spiral-bound, 96 pages.

Level: Middle School-High School
NX759463—\$24.95

Basic Mousetrap Vehicle Kit

More than a mousetrap vehicle kit, this is a complete start-to-finish design activity. The student follows the design process and sees direct applications of science and technology as he or she designs and builds a mousetrap-powered vehicle and competes with classmates to design the fastest car or the car that goes the farthest. Each kit includes a mousetrap, balsa wood, four CDs (for wheels), CD spacers, thrust washers, brass tubing, string, and building instructions. Requires white glue, ruler, hobby knife, wire cutter, and a drill or Dremel tool, sold separately.

Packs include enough material to build 10 or 30 mousetrap vehicles.
Level: Middle School-High School

NX757033 Kit—\$15.95

NX757034 10-Pack—\$125

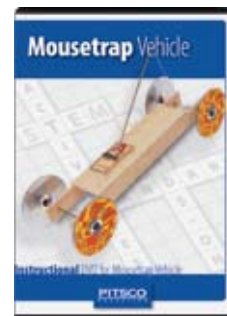
NX757035 30-Pack—\$335



Mousetrap Vehicle Video

Guide students through building a mousetrap vehicle with this step-by-step guide. Then, see how the stored energy in the mousetrap's spring can be used to speed the car across the room.

Along the way, learn about storing mechanical energy, Newton's laws of motion, and how to calculate speed. Closed-captioned. Time: 26 minutes.
Level: Middle School-High School
NX759835 DVD—\$24.95





Magnetic Mousetrap Vehicle

This mousetrap car really rolls thanks to its almost friction-free magnetic axle assembly. The secret? Tiny magnets embedded in the chassis hold the point of the steel axle in place. The result? Axles attach to the chassis as if by magic without pressure or friction. When a magnetic car races against a standard mousetrap vehicle, your students will see the effect of friction on speed and distance measurements. Requires hobby knife, screwdriver, ruler, drill, needle-nose pliers, wire cutter, and white glue, sold separately.

Level: Middle School-High School

NX724641 Kit—\$12.95

NX725384 25-Pack—\$275

CD Wheel Inserts

For the do-it-yourselfer, a set of four injection-molded wheel inserts that convert CD-ROMs and DVDs into nonwobbling wheels for your mousetrap vehicle. Includes bushings, string anchor, and screws.

Level: Middle School-High School

NX724642—\$2.95

10 or more pkgs—\$2.65 each pkg

100 or more pkgs—\$2.50 each pkg



CD Wheels

Use these normal-size CDs for wheels on your MTV. Axles and inserts not included.

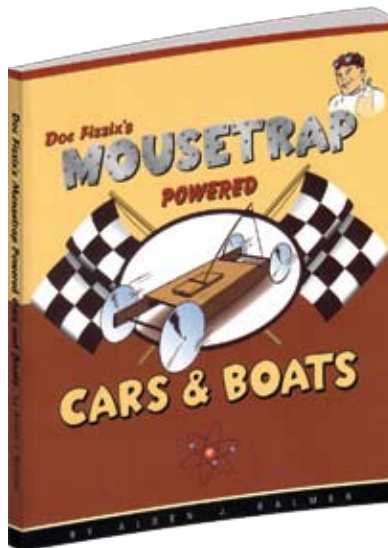
NX755036—\$4.95

10 or more pkgs—\$4.45 each pkg



Doc Fizzix's Mousetrap Powered Cars & Boats

Generously illustrated and fun to read, *Doc Fizzix's Mousetrap Powered Cars & Boats* examines in depth the physics of mousetrap vehicle construction. It takes students through each variable that must be considered during construction – making lightweight frames, reducing friction, making wheels, building for speed, and building for distance. Packed with excellent construction tips and written in simple, easy-to-understand terms, this lighthearted book will give your students the information they need to build winning mousetrap vehicles.



Note: This book replaces both the student's and teacher's editions of the popular *Mouse Trap Cars: The Secrets to Success*. The author has combined both volumes into one book and added even more information. Paperback, 149 pages.

Level: Middle School-High School

NX758261—\$9.95

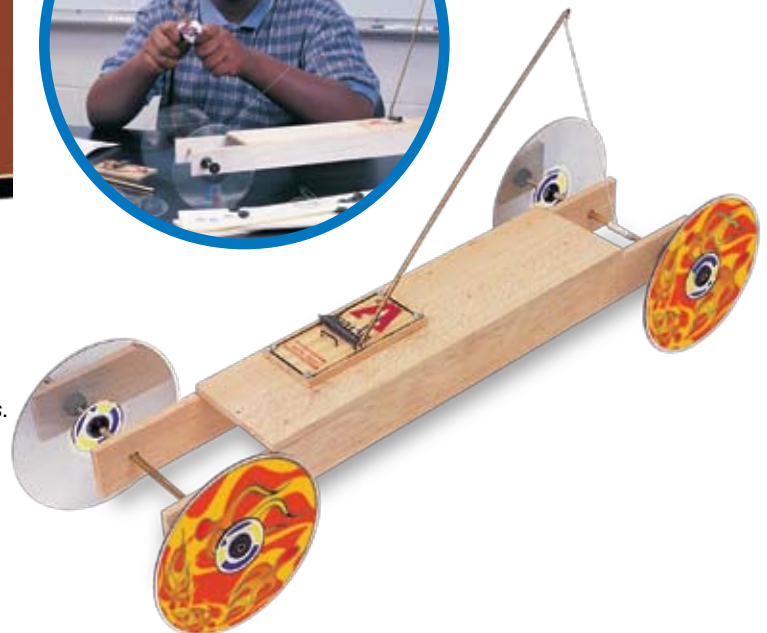
Mousetraps

Use these traps for mousetrap-powered vehicles.

NX734427 (pkg of 2)—\$2.95

NX750168 (pkg of 10)—\$6.95

10 or more pkgs—\$6.30 each pkg





education

Crane & Toolbox Racer



Crane

Give students an advantage – an understanding of the mechanical advantage inherent in cranes!

Simple machines such as pulleys, wheels and axles, and levers work together to help move heavy loads – these machines helped build the world as we know it. Featuring laser-cut parts, this *Crane Kit* can be built easily – students quickly move on to experimenting with load, ballast, and other concepts.

Includes basswood parts, string, hardware, and a user guide. Requires a small Phillips screwdriver and white glue such as *HD Bond II*, sold separately.

The class pack includes enough materials to build 30 *Crane Kits*.

Level: *Middle School-High School*

NX732869 Kit—\$19.95

NX735687 30-Pack—\$540



Toolbox Racer Starter Package

This package provides what you need to build and race two *Toolbox Racers* – a great way to bring a fun experiment into the classroom. Includes two *Toolbox Racer Kits*, two tape measures, and one *Start Gate*. Requires duct tape, string, and white glue, sold separately.

Level: *Early Learning-High School*

NX733099—\$29.95

Toolbox Racer Start Gate

This *Start Gate* rules when you need to race two *Toolbox Racers* side by side! Featuring simple construction with laser-cut basswood parts and hardware, this *Start Gate* goes together easily to get you racing in no time! Requires duct tape, string, and white glue, sold separately.

Level: *Early Learning-High School*

NX733053—\$4.95

Crane Video

A crane is a complex machine made of three simple machines, but building the *Crane Kit* isn't complex at all when following this step-by-step program. As you build, learn about the various simple machines and the uses of cranes around the world. Then, try replacing the crane's hook with a magnet or balancing the crane with a ballast. Closed-captioned. Time: 19 minutes.

Level: *Middle School-High School*

NX734126 DVD—\$24.95



Toolbox Racer

For a fun classroom activity that really measures up, check out the *Toolbox Racer Kit*.

Powered by the toolbox's favorite occupant – the tape measure – this racer is quick and simple to build. It demonstrates the elastic potential energy of the tape measure's spring and gets students excited about learning! Students can change out the 6' tape measure with a bigger one.

The racing setup is simple – just tape and string. Includes the laser-cut basswood parts and hardware to build the car body. Requires a tape measure – our 6' tape measure is recommended – duct tape, string, and white glue, all sold separately.

Level: *Early Learning-High School*

NX733049 Kit—\$5.95

NX735675 Toolbox Racer 30-Pack (6')—\$135

NX750394 Tape Measure – Economy (6')—\$6.95

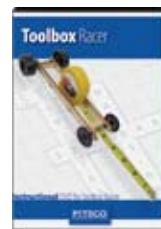
10 or more—\$6.25 each

Toolbox Racer Video

This program demonstrates how to build a *Toolbox Racer* and its *Start Gate* and how to set up for a race. As students follow this step-by-step process, they also learn about potential and kinetic energy, calculating kinetic energy, and testing for different variables related to the *Toolbox Racer*. Closed-captioned. Time: 16 minutes.

Level: *Intermediate-Middle School*

NX734123 DVD—\$24.95





Balloon Car Explore-A-Pak

Your students will feel inflated after they participate in this fun and challenging balloon car activity. Students build their own balloon-powered vehicles, ranging from the simple (card-stock templates are provided for the vehicle bodies) to the outrageous (students can dream up their own wild designs)!

If desired, the cars can be raced against one another in a classroom showdown. The *Balloon Car Explore-A-Pak* includes a teacher's guide, balloons, wheels and axles, templates, and other needed materials for 50 students.

NX990011—\$69

NX990052 Ford Template (pkg of 100)—\$38.50

NX990053 Chevy Template (pkg of 100)—\$38.50

NX990054 Dodge Template (pkg of 100)—\$38.50

NX990055 Tank Template (pkg of 100)—\$38.50



Zoon Air Car Pack

There's no better way to introduce students to the concepts of force, motion, transfer of energy, and friction than with an inexpensive activity they can do themselves with few tools and relatively little time. The *Zoon Air Car* introduces students to the basics of car design and performance through the use of straws, paper clips, rubber bands, and parts from a die-cut sheet. The *ZAC Pack* contains detailed instructions and enough supplies to make 30 *Zoon Air Cars*.

When students have finished building, testing, and modifying their *Zoon Air Cars*, set up a competition to find out which cars are the fastest and help students determine what makes one car better than the next. Requires needle-nose pliers, scissors, transparent tape, cool-melt glue gun and slugs, and ruler, sold separately.

Level: Intermediate-High School

NX724614—\$49

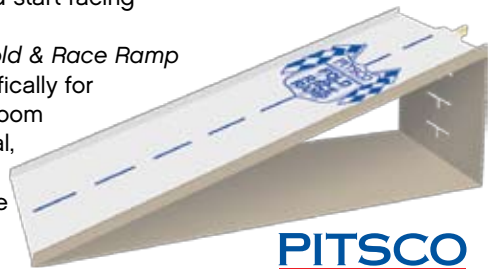
Colors and decorative designs may vary.

Fold & Race Ramp

Fold it up and start racing within minutes!

The *Pitsco Fold & Race Ramp* is designed specifically for elementary classroom needs. Economical, easy to store, and fun to use. Use the ramp to test and race *Fold-N-Roll Racers*, *Balloon Cars*, and other rolling models in your classroom.

NX990022—\$7.95



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Fold-N-Roll Racer

A collection of cool and colorful hot rods that can be cut out and folded into three-dimensional vehicles! Sixteen sweet street machines are printed in color on card-stock pages. Enough wheels and axles are provided to make all 16 models into rolling vehicles. The wheels that come with the kit are different from those shown in the photo. Custom and other wheels are available separately.

A great elementary transportation activity!

Level: Intermediate-High School

NX754546—\$29.95

Wooden Axles

These wooden dowels are great as axles for fold-and-roll vehicles and can be cut to any size needed.

NX733476 (3 mm x 18") (pkg of 10)—\$7.50



Fold-N-Roll Vehicles Teacher's Guide

Paper cars might seem elementary, but by designing, building, and experimenting with fold-and-roll vehicles, students discover keys to momentum, velocity, design, potential energy, material costs, and more.

Paperback/spiral-bound, 97 pages.

Level: Middle School-High School

NX732941—\$24.95



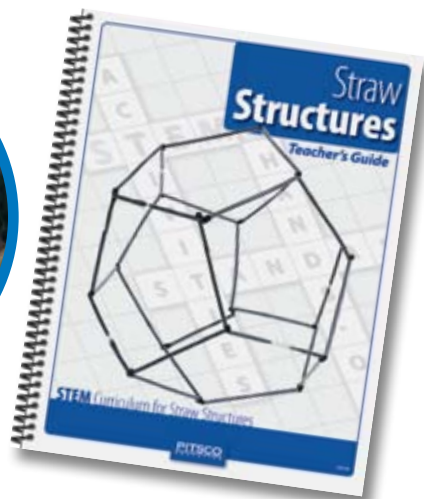


education

Straw Structures



PITSCO
EDUCATION



Straw Structures Teacher's Guide

Structures made with straws and pipe cleaners might look simple, but they offer a range of learning. Geometric figures and their strengths, ratios, structural designs, and static forces are some of the subjects in this guide that you and your students will really soak up! Paperback/spiral-bound, 95 pages.

Level: Middle School-High School

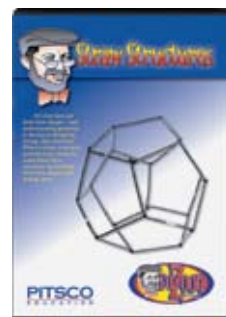
NX759728—\$24.95

Dr. Zoon Straw Structures Video

Join Dr. Zoon as he explains some basic principles of how structures work. To illustrate these principles, he uses straws and pipe cleaners to build a variety of structures including many geometric solids. Along with the demonstrations, he shows students how to build their own straw structures. Closed-captioned. Time: 24 minutes.

Level: Intermediate-Middle School

NX759703 DVD—\$24.95



A
\$106.90
value!

Straw Structures – Getting Started Package

Structures start taking shape with this Getting Started package. Students explore structures and geometric shapes with instruction from Dr. Zoon and the Polyhedra poster. This package provides material for 30 students.

Straw Structures – GS Package includes the following products:

- Plastic Straws (pkg of 500) (5 packages included)
- Pipe Cleaners (pkg of 100) (9 packages included)
- Polyhedra Poster
- Dr. Zoon Straw Structures Video (DVD)

NX735757 Straw Structures – Getting Started Package—\$79

Intermediate-High School

The Pitsco Bridge Book

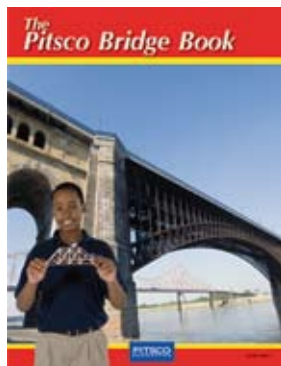
This complete guide to model bridge building discusses history of bridges, types of trusses, glue joints, and construction ideas.

This illustrated guide includes competition rules and drawings. Developed as a teacher's resource as well as a student's construction guide. Paperback, 22 pages.

Level: Middle School-High School

NX732455—\$2

10 or more—\$1.80 each

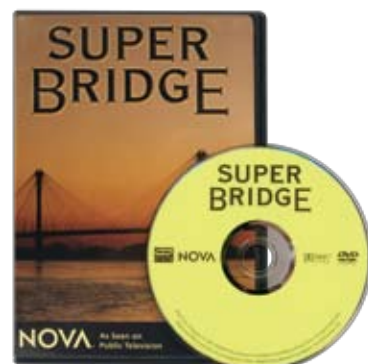


Super Bridge Video

Super Bridge covers every phase of the construction of the Clark Bridge that spans the Mississippi at Alton, Illinois. Featuring modern cable-stayed design, the bridge was built over four years in often adverse conditions. See how its builders overcame the project's unique challenges. CC: Closed-captioned Time: 120 minutes.

Level: Middle School-High School

NX733512 DVD—\$19.95



Dr. Zoon Structures DVD Series

Need more structure in your classroom? Just grab some straws, toothpicks, or balsa wood and bring the strength of structure activities to your students.

For beginners of structure activities, the *Dr. Zoon Straw Structures Video* and *Dr. Zoon Toothpick Bridges Video* build students' understanding of structures, design, and geometric shapes. For more advanced coverage of these concepts, as well as forces and construction techniques, the series offers the *Dr. Zoon Bridge Building Video* and *Dr. Zoon Tower Building Video*.

All four programs cover construction, tips, and explanation of concepts. Closed-captioned. Time: 125 minutes.

Level: Intermediate-High School

NX759711 DVD—\$69.95



Polyhedra Poster

Do your students need a little help in the area of geometric shapes? Strengthen their skills with this colorful polyhedra poster. Displays the vertices, edges, and faces of 18 different polyhedrons, including the five regular polyhedrons.

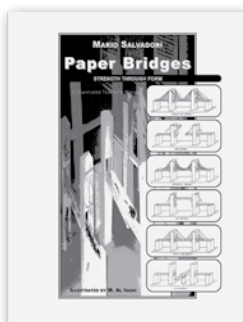
NX758497 (18" x 28")—\$9.95

Paper Bridges: Strength Through Form, an Illustrated Teacher's Manual

Students in Grades 5-9 can acquire a wealth of knowledge while having fun building paper bridges. The bridge-building activities in this guide introduce students to the engineering concepts of tension, compression, bending, and buckling. Students invent their own models, which stimulates creativity as they experiment with structural concepts. The need for time limits, financial budgets, and team collaboration is also covered. Includes 12 activities. Paperback, 30 pages.

Level: Middle School

NX754924—\$14



Colors and decorative designs may vary.

Straw Structures



Plastic Straws For Structures

Use for bridge- and structure-building competitions and activities.

NX723733 (1/4" diameter x 7-3/4" long, clear) (box of 250)—\$2.50

NX756856 (1/4" diameter x 10" long) (box of 500)—\$7



Art Straws For Structures

Unwaxed straws are 16 inches in length. Use for bridge and tower building and architectural models. Straws make lightweight but strong and durable projects.

NX752843 (4 mm diameter, 16" long) (box of 1,800)—\$39

Pipe Cleaners

One of the innovative folks here at Pitsco thought of a way to attach straws together for structures – pipe cleaners. Try it; you'll like it. Colors may vary.

NX754853 (pkg of 100)—\$3

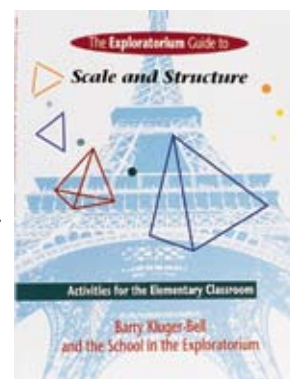


The Exploratorium Guide to Scale and Structure

A teacher's resource book full of structural engineering activities. Fun, practical activities teach aspiring engineers about structures and scale. Great for introducing students to structures. Projects include building with straws, clay, and toothpicks; constructing paper bridges; building domes; and load-testing structures. Filled with helpful illustrations and photos of kids doing the activities. Includes teacher's tips, discussion points, and extension options. Paperback, 198 pages.

Level: Elementary-Middle School

NX754466—\$45.95



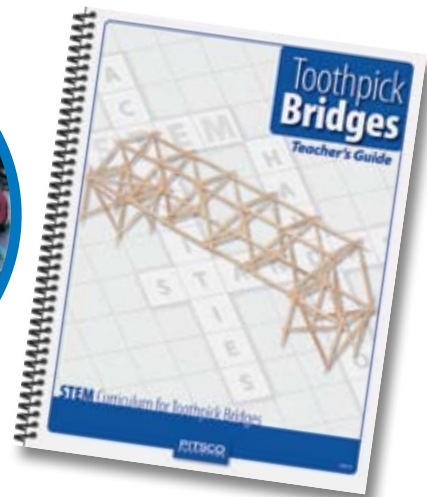


education

Toothpick Bridges



A
\$91.60
value!



Toothpick Bridges Teacher's Guide

This guide is ideal for those teachers who love toothpick bridge activities but need them to cover a greater span of curricula. Covering concepts such as tension, force, ratios, efficiency, and truss design, students learn much more than model building. Paperback/spiral-bound, 97 pages.

Level: Middle School-High School

NX759615—\$24.95

Toothpick Bridges – Getting Started Package

These bridges have a great amount of shear strength and are sheer fun for your students. The *Toothpick Bridge Tester*, *Dr. Zoon Toothpick Bridges Video*, and enough materials for 30 bridges are included. Requires hobby knife, waxed paper, and tape, sold separately.

The *Toothpick Bridges – GS Package* includes the following products:

- Toothpick Bridge Tester
- Empty 2 oz Glue Bottles (pkg of 30)
- Square Toothpicks (pkg of 800) (8 boxes included)
- Blue Structures Glue (16 oz) (2 in box)
- Waxed Paper
- Dr. Zoon Toothpick Bridges Video (DVD)

NX735589 Toothpick Bridges – Getting Started Package—\$79
Intermediate-High School

Dr. Zoon Toothpick Bridges Video

Since the dentist said to floss more often, Dr. Zoon has had to find some use for all those toothpicks!

This simple yet challenging activity is a favorite among many teachers. Let Dr. Zoon provide a few ideas and step-by-step instructions to ensure success for students.

When asked about the strength of toothpicks, Dr. Zoon replied, "We'll cross that bridge when we get to it." Closed-captioned. Time: 26 minutes.

Level: Intermediate-Middle School

NX759642 DVD—\$24.95



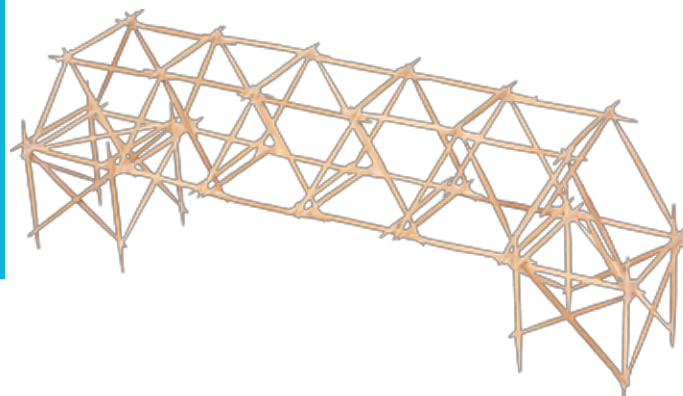
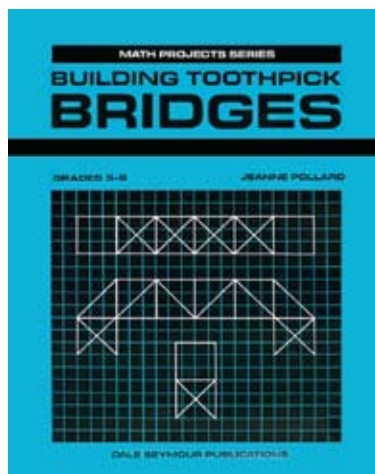
Building Toothpick Bridges

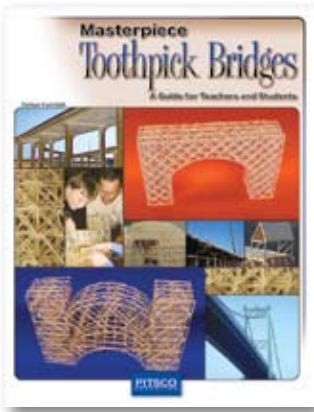
Link your math curriculum to the world around you with the motivational ideas in this book. A company of students builds a bridge with an architect, project managers, bookkeepers, a budget, and materials. The book provides a practical approach to math, geometry, and social studies through the problem of bridge construction.

For the teacher, the book contains clear guidelines and plans for this valuable unit. Paperback, 30 pages.

Level: Intermediate-Middle School

NX751784—\$29





Masterpiece Toothpick Bridges

More than just a resource, this activity guide helps teachers and students bridge the gap between building simple toothpick bridges and mastering the construction of a striking toothpick bridge.

Masterpiece Toothpick Bridges offers key design principles needed to construct an elaborate toothpick bridge, a structure unit with detailed lessons, material selection, building techniques and tips, a research paper assignment, bridge testing – even tips to get the local media to cover the testing event!

Plenty of photos illustrate the details of this black-and-white book. Paperback/spiral-bound, 48 pages.

Level: Middle School-High School

NX759026—\$19.95



Toothpick Bridge Tester

Here's an easy, economical way to find out how strong a toothpick bridge is. Attach the Pitsco *Toothpick Bridge Tester* to your finished bridge. Gradually fill the tester with weights until your bridge beats the competition or collapses. Weigh the tester to determine the load capacity (or breaking point) of your bridge. Includes mounting hardware. Requires sand or weights, sold separately.

NX730003—\$19.95

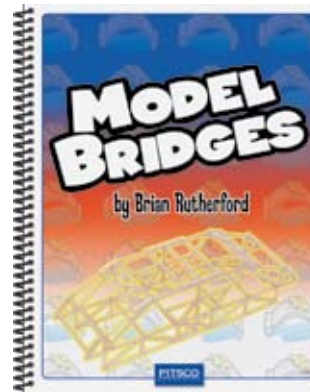
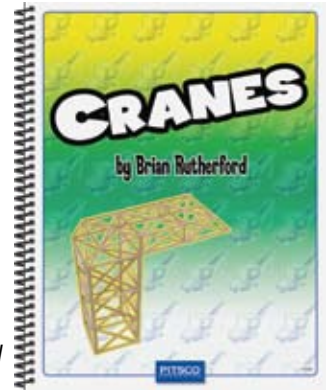
Colors and decorative designs may vary.

Cranes

The same engineering principles used in the design of a bridge or tower can also be used to design a model crane. Challenge your students and add variety to your program by having them try new engineering problems, such as building a crane. Paperback/spiral-bound, 32 pages.

Level: Middle School-High School

NX757060—\$4.95



Model Bridges

Students will explore structural engineering principles that apply to the design of bridges, including how to analyze ways in which structures might fail. Instructions are provided so students can follow the design process through sketching, drawing to scale, building, and testing model bridges of their own designs. Paperback, 27 pages.

Level: Middle School-High School

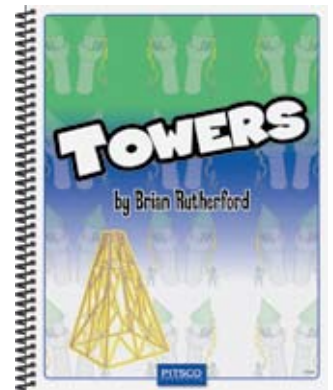
NX757061—\$4.95

Towers

Discover the secrets of building strong towers! This book investigates structural engineering principles as they apply to tower design. Students follow the design process as they sketch, draw to scale, build, and test their own model towers. Paperback, 32 pages.

Level: Middle School-High School

NX757059—\$4.95



Round Toothpicks

2-5/8" long.

NX751741 (pkg of 800)—\$1.50 each

10 or more pkgs—\$1.35 each pkg



Square Toothpicks

2-5/8" long.

NX751742 (pkg of 800)—\$2.50 each

10 or more pkgs—\$2.30 each pkg



Flat Toothpicks

2-3/8" long.

NX733450 (pkg of 2,500)—\$3.50 each



education

Solar Energy



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A
\$616.95
value!

Solar Vehicles – Getting Started Package

Saving energy in transportation is at the top of the list these days. The *Solar Vehicles* package provides materials for 30 students to design, build, and test their own solar cars, including six *Ray Catcher Solar Panels* that students share. Requires soldering iron and solder, hobby knife, cool-melt gun and glue, needle-nose pliers, and a ruler, sold separately.

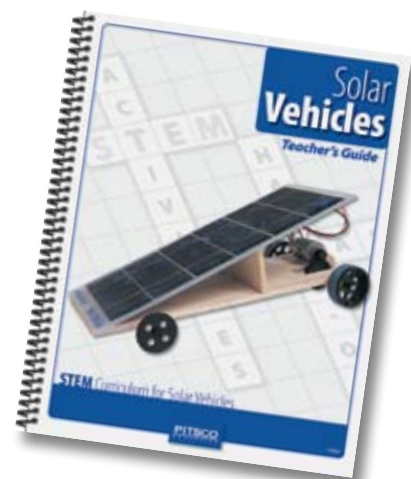
The *Solar Vehicles – GS Package* includes the following products:

- Ray Catcher Sprint Deluxe 30-Pack
- Dry Powder Graphite (2 tubes included)
- Ray Catcher Video (DVD)

NX735567 Solar Vehicles – Getting Started Package—\$575

Middle School-High School

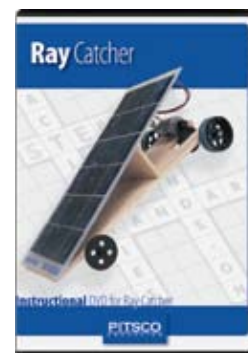
Note: Six *Ray Catcher Panels* are included in the *Deluxe Pack*®.



Solar Vehicles Teacher's Guide

Use the Sun to power cars *and* your students' minds! With this guide, you can cruise through activities, delving into photovoltaics, energy and power, ratios, data graphing, and much more – you'll really soak up the Sun!

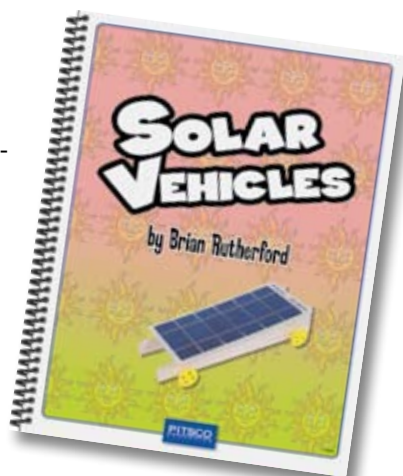
The *Solar Vehicles Teacher's Guide* contains NSTA, NCTM, and ITEEA standards addressed; teacher and student instructions for a variety of math, science, and technology activities; pretests and posttests; resource pages; and puzzles. Contains separate activities for middle school and high school students. Paperback/spiral-bound, 93 pages.
Level: Middle School-High School
NX759464—\$24.95



Ray Catcher Video

The *Ray Catcher* video steps your students through the building of this superfast solar car, which is designed for the Junior Solar Sprint contest.

Along the way, students will learn applicable science concepts such as photovoltaics, gears, friction, and more. Closed-captioned. Time: 24 minutes.
Level: Middle School-High School
NX732914 DVD—\$24.95



Solar Vehicles

Students learn the pros and cons of solar energy, the methods of generating and storing solar power, and the mechanisms that power real-life solar vehicles – from pulleys and gears to batteries and sensing devices. Finally, students apply their knowledge to their own engineering challenge – design, build, and race a vehicle powered only by sunlight. Contains super tips on maximizing power, reducing friction, and evaluating the performance of the vehicle. Paperback/spiral-bound, 31 pages.

Level: Middle School-High School

NX757856—\$4.95



Ray Catcher Sprint Deluxe Solar

All the materials needed to build a complete vehicle for the Junior Solar Sprint competition! The kit contains the required solar panel and electric motor plus two 10-1/2" x 4" balsa wood sheets, four nylon spacers, two alligator clips, two 5-1/2" axles, four wheels, four rubber bands, one plastic gear font, two screw eyes, and instructions. Requires soldering iron and solder, hobby knife, cool-melt gun and glue, needle-nose pliers, and a ruler.

Packs include enough material to build 10 or 30 *Ray Catcher* vehicles.

Level: Middle School-High School

NX721211 Kit—\$69.95

NX735562 10-Pack—\$189

NX735561 30-Pack—\$560

Ray Catcher Sprint

Featuring the *Ray Catcher Solar Panel* (10.5" L x 5.0" W x 0.08" thick), this kit contains all the official parts and meets the minimum specifications required by the Junior Solar Sprint competition. It includes the solar panel, the official electric motor, and a pair of small alligator clips for easy hookup. Chassis, wheels, and transmission are not included in this kit. Requires soldering iron and solder, hobby knife, cool-melt glue gun and glue, needle-nose pliers, and a ruler, sold separately.

Level: Middle School-High School

NX721210—\$59.95

NX721112 Solar Panel Only—\$49.95

10 or more—\$47.45 each

100 or more—\$44.95 each

NX754665 Alligator Clips (pkg of 10)—\$7.30



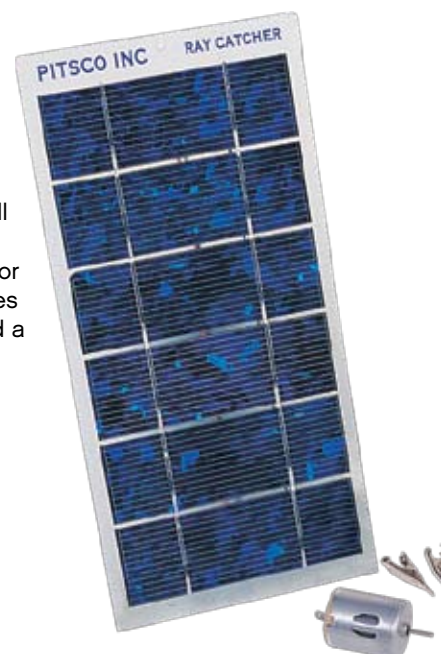
Power House

Teach your students about natural energy from the Sun and wind by showing them a demonstration of an energy-efficient home. This kit is a great classroom investment.

With this *Power House* kit, students learn about all sorts of energy techniques. Using a complete set of necessary supplies, including a windmill, solar panels, and a thermometer, students are able to construct their own model home and gather natural energy themselves. With more than 70 possible experiments, 20 models, and a user's guide full of energy information, this kit is the perfect addition to any science or technology class.

Level: Middle School-High School

NX758656—\$169





education

Solar Energy



A
\$323.95
value!

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SunEzoon Cars – Getting Started Package

Now it's easy to give an entire classroom a hands-on experience with solar energy. This Getting Started package – featuring the easy-to-assemble *SunEzoon* solar car – includes the *Dr. Zoon SunEzoon Video* and enough materials for students to build 30 solar cars. Requires scissors and hobby knife or sandpaper, sold separately.

The *SunEzoon Cars – GS Package* includes the following products:

- SunEzoon Solar Car 30-Pack
- Dr. Zoon SunEzoon Video (DVD)

NX735694 SunEzoon Cars – Getting Started Package—\$314
Intermediate-High School

SunEzoon Solar Car

Looking for a solar car that's a piece of cake to assemble? Want to interest students in using solar energy without grabbing glue guns or soldering irons? Then the *SunEzoon* is the kit for you.

SunEzoon works outdoors in full sunlight or indoors under a bright incandescent light. Each kit contains instructions, solar panel with alligator clamps, motor, wheels, steel axles, gear font, chassis parts, and a cut-and-fold cover. Construction requires scissors and a hobby knife or sandpaper, sold separately.

Packs include enough material to build 10 or 30 *SunEzoon Cars*.

Level: Intermediate-High School

NX728574 Kit—\$12.95

NX735625 10-Pack—\$115

NX735624 30-Pack—\$299



SunZoon Lite

Bigger isn't always better – give this little solar car a bright, sunny day, and it can really move! The *SunZoon Lite* is a perfect kit for solar car beginners.

Use the basswood chassis as is or cut it in a desired shape; the chassis can be painted any color desired. Includes the chassis, solar panel, Motor 280, gear font, front and back wheels, spacer material, adhesive tabs, and a template. No soldering required. Construction requires hobby knife, scissors, ruler, and optional hand cutting tools and finish, sold separately.

Pack includes everything needed to build 10 or 30 *SunZoon Lite* solar cars.

Level: Intermediate-High School

NX728576 Kit—\$8.95

NX735626 30-Pack—\$225



SunEzoon Cars Teacher's Guide

Pitsco's *SunEzoon Car* may be easy to build, but this guide exposes it as the perfect tool for learning various math, science, and engineering subjects. This comprehensive guide sheds light on drive and pinion gears, slope, coordinate graphing, speed, velocity, acceleration, and more. Paperback/spiral-bound, 121 pages.

Level: Middle School-High School

NX759465—\$24.95

Dr. Zoon SunEzoon Video

Work along with Dr. Zoon as he builds the *SunEzoon* solar car. While demonstrating the step-by-step building instructions, he illuminates the scientific principles involved: photovoltaics, gears, energy, and alternative energy.

The *SunEzoon Car Kit* and the *Dr. Zoon SunEzoon Video* are the perfect combination for introducing students to the world of solar power. Closed-captioned. Time: 14 minutes.

Level: Intermediate-Middle School

NX759751 DVD—\$24.95



Motor 280

A great little motor/generator for small electric vehicles or solar racers. This is the motor specified by the Junior Solar Sprint Competition! Operating voltage: 1.5-3VDC at 330 mA.

NX754428—\$1.75 each

10 or more—\$1.60 each



Motor 385

A heavy-duty motor/generator with carbon brushes. It is an excellent choice for robotics design, model racing cars, R/C vehicles, or any other high-torque, low-power consumption applications. 6-24VDC, 1,300 mA. No-load speed 14,300 rpm, stall torque 7.71 oz-in.

NX750076—\$4.50 each

10 or more—\$4.05 each



Motor 500

Use this motor/generator with our Pitsco plastic gears. Smooth-running motor with very low starting friction. Operating range: 1.5-6VDC, 150 mA.

NX750075—\$4 each

10 or more—\$3.80 each



Solar Wheels

Smooth wheels with very low rolling resistance. 1-1/8" diameter with O-ring "tire."

NX713340 (pkg of 100)—\$25

10 or more pkgs—\$22.50 each pkg



Wide Rubber Bands

Approximately 1/2" width x 2" length.

NX756136 (pkg of 50)—\$1.95



A
\$249.95
value!

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EDUCATION

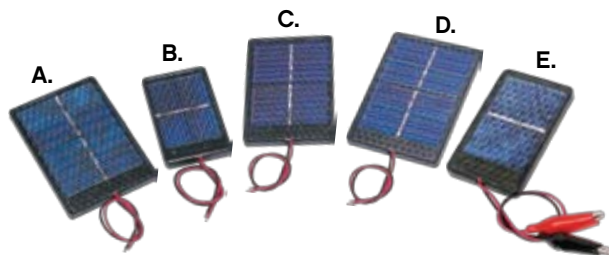
SunZoon Lite – Getting Started Package

Try this low-calorie approach to solar energy! This package has enough materials for 30 students to build a *SunZoon Lite* solar car, plus it has the *SunZoon Lite* video. Construction requires hobby knife, scissors, ruler, and optional hand cutting tools and finish, sold separately.

The *SunZoon Lite – GS Package* includes the following products:

- SunZoon Lite 30-Pack
- SunZoon Lite Video (DVD)

NX735635 SunZoon Lite – Getting Started Package—\$228
Intermediate-High School



Solar Mini Panel

Connect these solar panels to motors to make solar-powered vehicles and other projects. These solar cells are enclosed in plastic cases, so they are durable in your classroom. Panels A, C, and D are 2-5/8" x 3-3/4". Panels B and E are 1-3/4" x 3".

A. NX756871 (0.5V, 800 mA)—\$4.95

10 or more—\$4.45 each

B. NX756870 (1.0V, 200 mA)—\$2.95

10 or more—\$2.65 each

C. NX756851 (1.0V, 400 mA)—\$4.95

10 or more—\$4.45 each

D. NX756852 (2.0V, 200 mA)—\$4.95

10 or more—\$4.45 each

E. NX759043 with alligator clips
(.45V, 400 mA)—\$2.95

Gear Font

Get your motor running! These 16 plastic gears come in an easy punch-out frame and range in size from 1/2" to 2". Redesigned with accurate gear-tooth geometry for a smoother, more fluid fit, these gears can be used on most Pitsco products requiring a gear to turn a servo, wheel, or motor.

NX725300—\$5 each

10 or more—\$4.50 each

100 or more—\$4.25 each



Solar Designer's Car

Students make a solar-powered car that will travel under bright sunlight using the supplied parts and instructions. Other project ideas are suggested. Kit contains the following: solar panel (.45V, 400 mA) 1-3/4" x 2-15/16", DC motor, plastic body tube, Pitsco plastic gear font, two axles, four Pitsco wheels, four 1/8" brass washers, and instruction guide. Construction requires a drill with a 9/64" bit, a ruler, and a hobby knife or sandpaper, sold separately.

Pack includes enough material to build 25 *Solar Designer's Cars*.

Level: Middle School-High School

NX750073 Kit—\$11.95

10 or more—\$10.75 each

NX751417 Solar Designer 25-Pack—\$265

NX735626 30-Pack—\$225





education

Wind Energy



A
\$609.95
value!

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EDUCATION

Wind Energy – Getting Started Package

The need for alternative energies has never been more apparent than right now! Get students thinking about energy concepts through this hands-on activity. The Getting Started package has enough materials for 25 student wind generators and has a WinDynamo II for teacher demonstrations or advanced student explorations.

The *Wind Energy – GS Package* includes the following products:

- Wind Gen 25-Pack
- WinDynamo II
- Wind Gen Video (DVD)

NX723616 Wind Energy – Getting Started Package—\$560
Middle School-High School

WinDynamo II

Pitsco's wind generator shows students how alternative energy is created by harnessing the wind produced by a 14" table fan. Experimenting with different blade pitches is a breeze with the front adjustment knob that moves all three blades simultaneously. The *WinDynamo II*, which can produce up to a half amp at 1.5 volts, features a stackable banana connector for adding a voltage meter.

This wind generator also comes with an activity board for demonstrating how to convert the electricity into light, sound, and mechanical energy. Requires a screwdriver and a 14" table fan or real wind, not included. Some of the activities included with the *WinDynamo II* require the use of a multimeter, sold separately. Requires a Phillips screwdriver, sold separately.

Level: Middle School-High School

NX728400—\$295

NX728623 14" Table Fan—\$65.95



Wind Energy Teacher's Guide

Using the *WinDynamo II* with the *Eco-Wind Generator Kit* or the *Wind Gen Kit*, this guide details hands-on activities to teach students how to measure wind speed, calculate rpm, determine optimum pitch angles, create a wind farm producing a specified voltage, and more. Paperback/spiral-bound, 99 pages.

Level: Middle School-High School

NX732942—\$24.95

Wind Gen Video

Putting together the *Wind Gen Kit* is a breeze when you have this video guiding the way.

Just follow these clear steps to build our laser-cut kit, and your students will be experimenting in no time! And along the way, they learn about the importance of wind energy and its amazing potential. Closed-captioned. Time: approximately 12 minutes.

Level: Intermediate-High School

NX732913 DVD—\$24.95



Wind Gen

Wind energy has the potential to supply all the electricity needed in the United States. Introduce students to this renewable energy with the *Wind Gen Kit*.

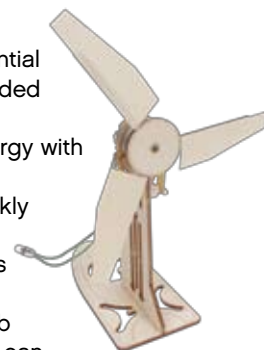
With this kit, students quickly build a windmill that catches a breeze from a fan and converts it into energy. Students see this energy when it lights a bulb attached to the motor. Or, they can wire several mills together to power larger devices such as a radio or small motor.

The *Wind Gen Kit* features a motor with a pre-soldered bulb and laser-cut parts that fit together for a clean and easy build. Requires white glue, glue stick, scissors, and a high velocity fan, sold separately.

Level: Middle School-High School

NX732197 Kit—\$12.95

NX732470 25-Pack—\$290





Eco-Wind Gen – Getting Started Package



The need for alternative energies has never been more apparent than now. Get students thinking about energy concepts through this hands-on activity. The Getting Started package has enough materials for 30 student wind generators and has a *WinDynamo II* for teacher demonstrations or advanced student explorations. Requires cool-melt glue to attach the motor, scissors, and a high velocity fan (or wind), sold separately.

The *Eco-Wind Generator – GS Package* includes the following products:

- Eco-Wind Gen 30-Pack
- WinDynamo II
- Eco-Wind Generator Video (DVD)

NX736309 Eco-Wind Gen – Getting Started Package—\$499
Middle School-High School

Eco-Wind Gen Video

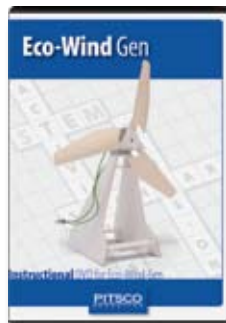


Wind energy comes to life for students with this video's insight to the science and technology of wind generators. See how to build a model wind generator and understand how the model – and a full-size wind generator – works.

This video leads students through the construction and operation of an *Eco-Wind Generator* and provides a scaling activity using the completed model; STEM connections; a Make the Connection section discussing wind energy, rotational energy, and how the generator creates electricity; and more. Closed-captioned. Time: Approximately 25 minutes.

Level: Intermediate-High School

NX759898 DVD—\$24.95



Eco-Wind Gen



Similar to the *Wind Gen Kit*, this wind generator is constructed of sturdy card-stock parts and is easy to build. This is an economical choice if you want everyone in the class to build and have one so students can see the power of the wind up close!

The kit measures 8-3/4" x 4-1/4" x 2-1/8" and comes with die-cut parts and the *Motor 500* with wires and a lightbulb. Requires a high-velocity fan (or wind), hobby knife, scissors, and cool-melt glue, sold separately.

Packs include enough material to make 10 or 30 *Eco-Wind Generators*.

Level: Intermediate-High School

NX735543 Kit—\$7.95

NX736307 10-Pack—\$74.95

NX736308 30-Pack—\$220

Colors and decorative designs may vary.



Electric Energy Prop Racer

This unique vehicle is part plane, part car – although it moves on wheels, it is battery powered and mobilized by a plane propeller. The kit includes CDs for wheels, CD hubs, balsa wood material for the body, a battery holder, and a propeller. Some assembly required. Requires two AA batteries, hobby knife, straightedge, soldering iron and solder, drill, glue, double-sided tape, small screwdriver, and transparent tape, sold separately.

Level: Intermediate-High School

NX725784Kit—\$12.95

NX725785 25-Pack—\$235



Switch On! Electronic Building Block Set

With this innovative set, children as young as eight can discover the basic principles of electronics. In the same way that children build towers with wooden blocks, they can build real, functioning electrical circuits with *Switch On!*

From the most basic to intricate, more than 40 different circuits can be built with the color-coded components. Components are large and easily manipulated by small hands. Set includes battery box, electric motor, fire engine siren, flashing doorbell, diode, potentiometer, resistors, transistors, capacitors, and conductors – 50 pieces in all!

Includes complete step-by-step instructions and a base-building plate. Requires four AA batteries, sold separately.

Level: Intermediate-High School

NX756121—\$59.95

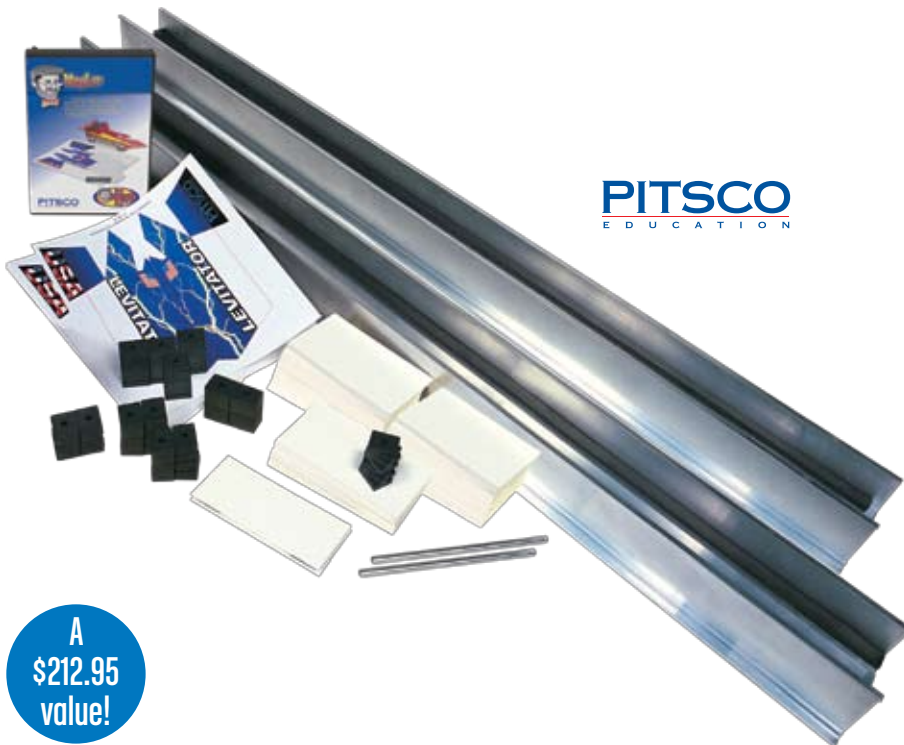
NX751046 AA Batteries (pkg of 2)—\$1.95



education

Magnetic Levitation

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A
\$212.95
value!

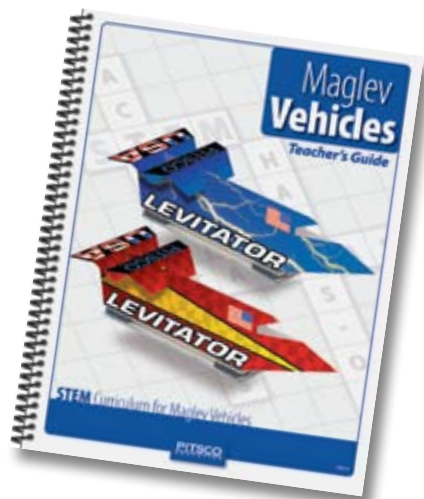
Maglev Vehicles – Getting Started Package

Everyone in the class has a shot at levitation with our *Maglev Vehicles – GS Package*. The pack has enough materials for 30 students to build *Levitorator* maglev vehicles, including 30 car templates, 30 precut card-stock bases, 100 ceramic magnets, a *Maglev Track*, and a *Dr. Zoon Maglev Video*. Requires scissors and transparent and double-stick tape, sold separately.

The *Maglev Vehicles – GS Package* includes the following products:

- Levitorator Maglev 30-Pack
- Maglev Track
- Dr. Zoon Maglev Video (DVD)

NX735621 Maglev Vehicles – Getting Started Package—\$190
Intermediate-High School



Maglev Vehicles Teacher's Guide

Students will find this guide's activities attractive – even when they discover just how repulsive they are! Using the repulsive force of like magnetic poles, maglev vehicles are an amazing mode of transportation that encourages understanding of magnetic repulsion, friction, propulsion systems, equations, analyzing and graphing data, and more. Paperback/spiral-bound, 97 pages.

Level: Middle School-High School

NX759613—\$24.95

Dr. Zoon Maglev Video

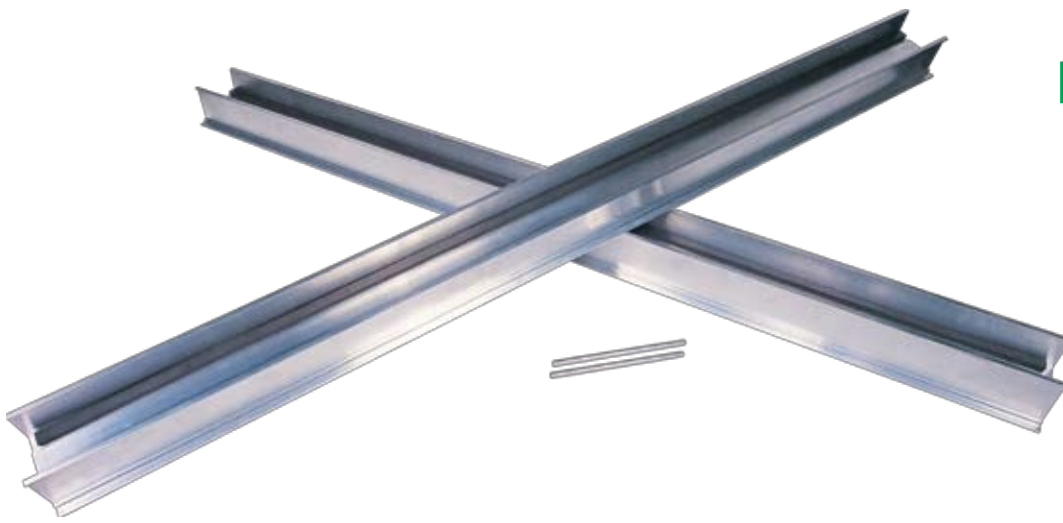
With magnetic levitation, objects can be levitated, or held floating in midair, by the force of magnetism. In this video, Dr.

Zoon illustrates some of the scientific principles behind magnetic levitation, and he goes step-by-step through the process of building and testing a maglev vehicle. Closed-captioned. Time: 15 minutes.

Level: Middle School-High School

NX759748 DVD—\$24.95





Maglev Track

How can you have a race when your wheels don't touch the ground? Welcome to the world of levitation! Our *Maglev Track* is a great way to teach your students the technology of magnetic levitation while letting them experience science on the fast track.

The *Maglev Track* includes two aluminum 4' tracks that can be lined up end-to-end or placed alongside one another for races, as well as four 4' strips of magnet that act to repel your car and keep it in the air. Includes two pins to hold two track pieces together.

As a starter car, we have included the *Levigator Kit* with the track. This kit gives students a choice of two car designs, a tough base made of precut card stock, and ceramic magnets that keep the car afloat above the racing track.

NX726000—\$129

Additional Section of Maglev Track

Purchase additional sections of track to make a 12-foot, 16-foot, or even longer *Maglev Track*. Not compatible with previous maglev tracks.

NX726600—\$79



Levigator

A magnetic levitation vehicle uses a strong electromagnetic field to resist gravity and to keep the vehicle floating without touching the ground. With this kit, students build their own vehicle and race down the *Maglev Track*. Each kit contains two patriotic red, white, and blue cutout car designs, as well as four ceramic magnets and a tough, precut card-stock base. Requires double-stick tape and scissors, sold separately.

Packs include enough materials to build 10 or 30 *Levigator* kits.

Level: Intermediate-High School

NX726223 Kit—\$3.95

NX735631 10-Pack—\$21.95

NX735632 30-Pack—\$55



Modern Marvels: Bullet Trains Video

The first thing you probably think of when you hear the word *train* is the old whistle-blowers. This video introduces a much different train: the high-speed, high-tech locomotives of today's railways. These bullet trains travel more than 300 miles per hour! And though most trains still rely on century-old technology, this video looks into their possible successors – locomotives that use magnetic levitation to coast. Includes a behind-the-scenes look at the fastest trains ever made – the *Shinkansen* (the original bullet train), the *Acela*, and the *TGV* – and features interviews with high-profile leaders of the train industry. Time: 50 minutes.

Level: Middle School-High School

NX732919 DVD—\$29



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A
\$213.90
value!



Straw Rockets Teacher's Guide

Straw rockets might be an introductory rocket activity, but this guide will help you get a lot of educational mileage out of them! With these fun activities, students grasp a variety of subjects including force and motion, thrust, center of gravity, prediction, measurements, and tons more!

The *Straw Rockets Teacher's Guide* contains NSTA, NCTM, and ITEEA standards addressed; teacher and student instructions for a variety of math, science, and technology activities; pretests and posttests; resource pages; and puzzles. Contains separate activities for middle school and high school students. Paperback/spiral-bound, 90 pages. Level: Middle School-High School

NX759459—\$24.95

Straw Rockets – Getting Started Package

Building and experimenting with these simple rockets is the perfect way to introduce students to rocketry. And they'll learn a bevy of physics principles in the process! Enough materials for 30 students to build four rockets each. The *Straw Rocket Launcher* and the *Dr. Zoon Straw Rocket Video* are included. Requires scissors, ruler, and transparent tape, not included.

The *Straw Rockets – Getting Started Package* includes the following products:

- Straw Rocket Class Pack
- Straw Rocket Launcher
- Dr. Zoon Straw Rocket Video (DVD)

NX735783 Straw Rockets – Getting Started Package—\$199
Elementary-High School

Straw Rocket Launcher

Students can build their own straw rockets and test them on the *Straw Rocket Launcher*. Just like early rocket pioneer Robert Goddard, they can conduct scientific experiments by varying the trajectory angle and launch energy. These rockets can travel up to 50 feet!

The *Straw Rocket Launcher* uses pneumatic force created by releasing a weighted drop rod in the cylinder to launch rockets. The force of the launch can be controlled by varying the release height of the rod. The launcher features:

- Simple operation
- Adjustable trajectory angle with angle gauge
- Clear tube, which displays internal parts
- Adjustable launch force

Building straw rockets is a fun, inexpensive activity and a great way to introduce students to rocketry. Use with *Precision Straws*, sold separately. Recommended for use in a large, open indoor area, such as a gymnasium.

NX720426—\$169



Dr. Zoon Straw Rocket Video

Objects flying through the air, projectile motion under scrutiny, forces changing – has the classroom gone wild? No, it's just Dr. Zoon launching into the subject of straw rockets!

Follow along step-by-step as Dr. Zoon builds and launches rockets from the *Straw Rocket Class Pack*. Plus, he'll explain several physics principles that come into play with these nifty rockets. Closed-captioned. Time: 21 minutes.

Level: Middle School-High School
NX759700 DVD—\$24.95

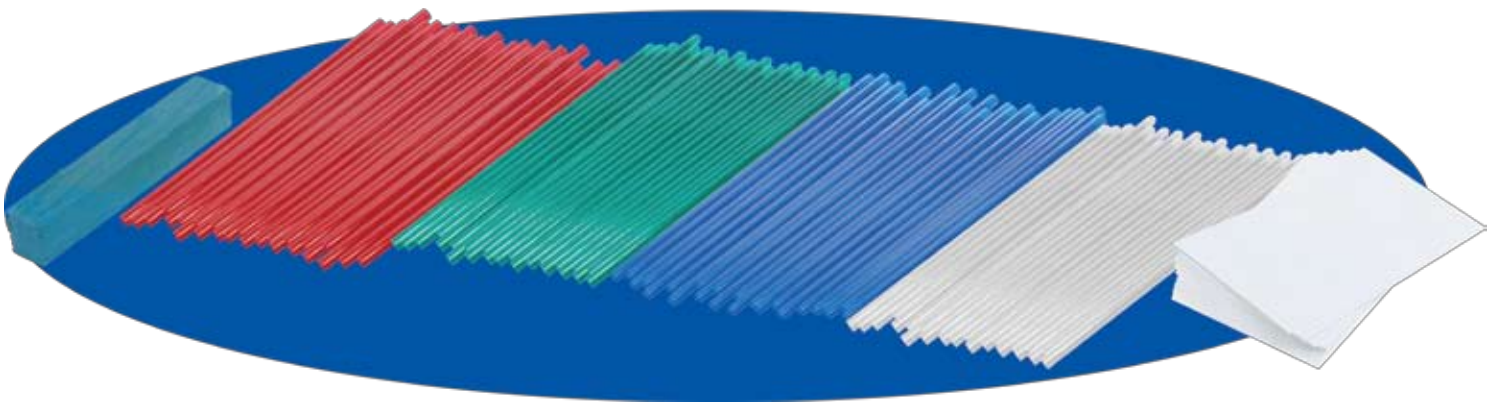


Clear Precision Straws

These precision straws are manufactured to fit perfectly on the Pitsco *Straw Rocket Launcher*! Made from Mylar, these straws are durable, can be glued, and best of all, launch every time!
NX735782 (pkg of 120)—\$12.50

Variety Pack Precision Straws

Manufactured to fit perfectly on the Pitsco *Straw Rocket Launcher*, *Precision Straws* are used to make straw rockets that will launch every time! They are made from Mylar for durability and can also be glued. *Precision Straws* are available in several colors – choose from clear, red, blue, green, or an assortment.
NX735781 (pkg of 120)—\$12.50



Klean Klay

Makes great projectiles and straw rocket nose cones.

NX753748 Blue (1 lb)—\$3.50 each
10 or more—\$3.25 each

Straw Rocket Class Pack

For a fun and easy activity to illustrate oodles of scientific principles, look no further than this introductory rocket project. The *Straw Rocket Class Pack* will help teach projectile motion, center of gravity, initial velocity, introductory aerodynamics, and more. Aimed at fifth to ninth graders, this activity is a great way to teach students the principles of rocketry before going on to engine- or hydrogen-powered rockets.

This pack includes enough *Precision Straws*, clay, and fin material for 30 students to make four rockets each, which enables them to experiment with different weights, straw lengths, and fin designs.

Pack includes student instructions. Requires launcher, scissors, ruler, and transparent tape, sold separately.

Level: *Elementary-High School*
NX735784—\$19.95



A
\$113.95
value!

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KaZoon Kites – Getting Started Package

“Project on a string” usually indicates an inexpensive activity, and this is no exception. This Getting Started package includes materials needed for 30 tetrahedron kites and the *Dr. Zoon KaZoon Kite Video*. Requires scissors and a ruler, sold separately.

The *KaZoon Kites – GS Package* includes the following products:

- KaZoon Kite 30-Pack
- Dr. Zoon KaZoon Kite Video (DVD)

NX723613 KaZoon Kites – Getting Started Package—\$99
Middle School-High School



KaZoon Kites Teacher's Guide

You don't have to play with lightning to learn from kites! This guide shows how to construct a tetrahedron kite and use it to demonstrate many important principles: lift, area and volume, density, forming and testing a hypothesis, tetrahedral and polyhedral design, and more. Paperback/ spiral-bound, 96 pages.

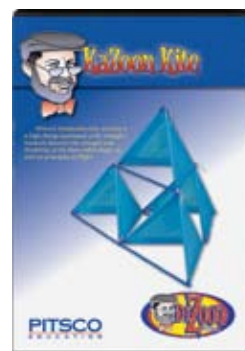
Level: Middle School-High School
NX759461—\$24.95



Kite Twine

Polyester/cotton, roll of 300 feet.

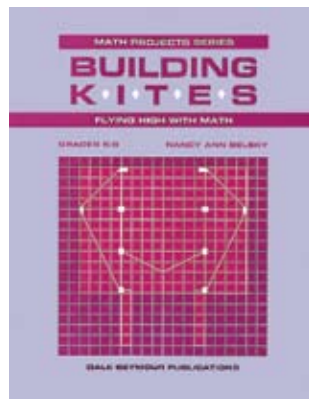
NX751912—\$2



Dr. Zoon KaZoon Kite Video

Watch as Dr. Zoon builds a tetrahedron kite using items contained in the *Dr. Zoon KaZoon Kite* kit, sold separately. By following Dr. Zoon's step-by-step instructions, students learn how to construct their kites for maximum success aloft and are exposed to math and science principles in the process. Closed-captioned. Time: 38 minutes.

Level: Intermediate-High School
NX759747 DVD—\$24.95



Building Kites

This great activity book integrates mathematics into kite building. These fun, challenging, hands-on kite projects provide opportunities for students to:

- Follow and solve problems.
- Express their creativity while planning and building usable models.
- Apply math as they enlarge patterns, determine measurements, and look for relationships.
- Continue to apply math as they estimate the altitude of their kites.
- Experience the satisfaction of seeing their kites fly.

Paperback, 65 pages.

Level: Middle School-High School
NX753173—\$29

KaZoon Kite Kit

Go fly a kite and discover the principles of flying in the same way the pioneers of flight did. You will learn about flight while assembling a flying machine that soars so easily you may have trouble getting it down! This kit comes complete with step-by-step instructions and everything else you need except wind!

Level: Middle School-High School

NX756772 Kit—\$6.95

NX723626 30-Pack—\$89



A
\$183.70
value!

Model Airplanes – Getting Started Package

Introduce aviation with rubber band-powered paper planes and watch class interest soar! This Getting Started package includes materials for 35 students to build and fly their own *Delta Dart*. It also comes with the *Dr. Zoon Delta Dart Video*.

Requires a hobby knife and scissors, sold separately.

The *Model Airplanes – GS Package* includes the following products:

- Delta Dart Model Airplane Kit 35-Pack
- Model Airplane Sample Set
- Insta-Cure+ Glue (5 one-ounce bottles included)
- Indoor Rubber Band Motor Winder
- Dr. Zoon Delta Dart Video (DVD)

NX723658 Model Airplanes – Getting Started Package—\$160
Middle School-High School



Indoor Rubber Band Motor Winder

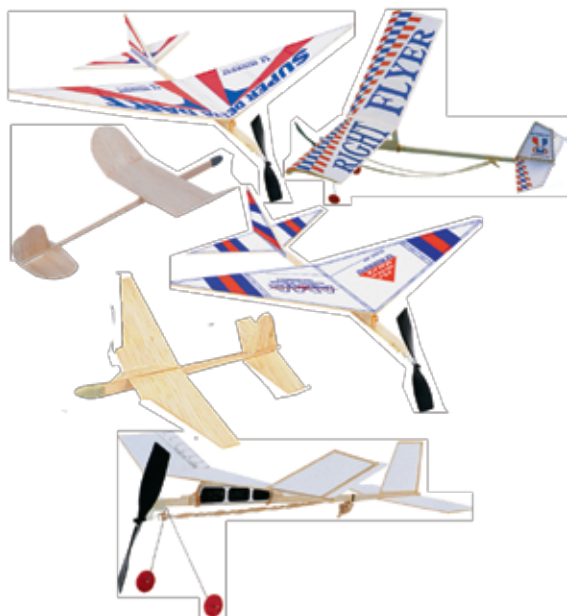
Twist your rubber motors faster with this 15-to-1 winder. Designed for indoor model competitions, this handy device will make easy work of winding your models for peak performance.

NX757441—\$32

Model Airplanes Teacher's Guide

Need an angle of attack to teach students science and technology concepts? Just don the aviator glasses and have them build the *Delta Dart* model airplanes powered by rubber bands. Then, this guide's activities will help them understand forms of energy, aerodynamic forces, initial velocity, how to design to achieve specific kinds of performance, and more.

The *Model Airplanes Teacher's Guide* contains NSTA, NCTM, and ITEEA standards addressed; teacher and student instructions for a variety of math, science, and engineering activities; pretests and posttests; resource pages; and puzzles. Contains separate activities for middle school and high school students. Paperback/spiral-bound, 109 pages.
Level: Middle School-High School
NX759729—\$24.95



Model Airplane Sample Set

An excellent opportunity to preview six airplane models: *Right Flyer*, *Delta Dart*, *Super Delta Dart*, *Flip Glider*, *Star Glider*, and *Shoobox R.O.G.*

NX757449—\$49

Colors and decorative designs may vary.



Delta Dart Model Airplane Kit

Use this rubber band-powered model airplane for Grades 4 and up. Pylon-mounted, paper-covered wings give stable flight. Indoor or outdoor use. Wingspan of 11-1/2". Requires a hobby knife, scissors, and glue, sold separately.

Pack includes enough material to build 35 model airplanes.

NX757453 Kit—\$5.50

NX750187 35-Pack—\$53

Dr. Zoon Delta Dart Video

Join Dr. Zoon as he builds a *Delta Dart* model plane, talks about some of the aeronautic principles involved, and gives some pointers on the construction process. This is one high-flying video! Closed-captioned. Time: 21 minutes.

Level: Middle School-High School

NX759750 DVD—\$24.95





education

Hot-Air Balloons



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A
\$498.95
value!

Hot-Air Balloons – Getting Started Package

Give your students a lift with hot-air balloons! This Getting Started package has everything needed to get your class started in hot-air balloons, including materials for 30 students to each build their own hot-air balloons, launching equipment, and the *Dr. Zoon Hot-Air Balloons Video*.

Requires a propane canister and scissors, sold separately.

The *Hot-Air Balloons – GS Package* includes the following products:

- Zoon Balloon 30-Pack
- Inflation Station Launcher
- Adventures in Lighter-Than-Air Flight
- Hot-Air Balloon Video (DVD)

NX735566 Hot-Air Balloons – Getting Started Package—\$470
Middle School-High School

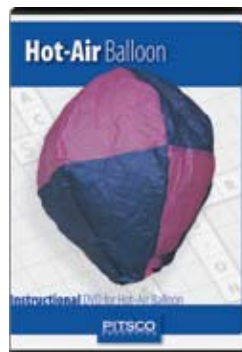


Hot-Air Balloons Teacher's Guide

Give your classroom curriculum a lift with the *Hot-Air Balloons Teacher's Guide*. Students learn to calculate surface area and volume; to analyze flights; and to discover how lift, drag, buoyancy, and temperature affect hot-air balloon flight. Paperback/spiral-bound, 94 pages.

Level: Middle School-High School

NX759614—\$24.95



Hot-Air Balloon Video

Hot-air balloons make great physics experiments – and now it's easier than ever to succeed with this activity! This video leads students through the process of cutting and gluing the gores to construct their own *Zoon Balloon*. Then, they learn to inspect their balloons and keep them in top shape for launch. Following this, students do a test launch with an indoor launcher, followed by the outdoor launch with a propane launcher.

The program also provides activities for analyzing balloon flight, understanding the physics of hot-air balloons, and varying volume. Closed-captioned.

Level: Middle School-High School

NX759897 DVD—\$24.95

Inflation Station Launcher

Building a hot-air balloon is a great project for students, but you need a launcher to really get the most out of the activity. This hot-air balloon launcher was designed for the safest and easiest launch possible. The launcher features a cool-to-the-touch chimney and a grill to block access to the flame. The inflation guides make it a breeze to hold the balloon in place while filling. These guides hold the balloon open, resulting in a faster inflation time – plus they keep hands from drifting over the blast of hot air.

The *Inflation Station* launches balloons ranging in size from two to nine feet. Also includes propane cylinder base, attached torch kit and self-igniter, *Adventures in Lighter-Than-Air Flight* book, and instructions. Requires a standard propane canister, sold separately. **NX736094—\$399**



Zoon Balloon Class Pack II

This is a great way to introduce students to the principles of lighter-than-air flight as well as the concepts of temperature, density, and buoyancy. Each *Hot-Air Balloon Kit* provides students with everything they need to make their own hot-air balloon! Includes instructions, balloon construction paper, a glue stick, and a balloon gore pattern. The hot-air balloon is approximately two feet in diameter. Requires launching equipment, scissors, and tape, sold separately.

Packs include enough material for 10 or 30 students to each make their own hot-air balloon.

Level: Middle School-High School

NX729609 Kit—\$6.95

NX735565 10-Pack—\$36.95

NX735564 30-Pack—\$99

Propane Cylinder For Balloon Launcher

NX752100 (approximately 8" tall, 16.4 oz)—\$5.50

This item is deemed hazardous by the Department of Transportation; therefore, a flat fee of \$30 will be added for ground delivery. Shipping by air is prohibited. The hazardous fee will be in addition to the regular shipping charges.

Indoor Balloon Tester

Before the big launch outside, wouldn't it be nice to test student balloons in the confines of your school?

This innovative launcher will test-fly hot-air balloons safely and effectively. Because the unit runs on electricity, you don't have to worry about fumes from the unit. You will, however, need to have a heavy extension cord available (12 gauge recommended) for optimum performance.

This unit is intended for indoor use only. For outdoor launches, purchase the *Pitsco Inflation Station Launcher*.

NX713263—\$99



Adventures in Lighter-Than-Air Flight

A colorful and carefully researched journey through the history and science of lighter-than-air flight.

Students learn about Archimedes' principle, the density and lift of gases, atmospheric pressure, gravity, why air is called a fluid, how airships and balloons fly, and more. Includes science activities, classroom discussion questions, and instructions for building six-foot and nine-foot tissue paper hot-air balloons. Paperback, 15 pages.

Level: Middle School-High School

NX757744—\$4.95

10 or more—\$4.45 each



Construction Paper

Balloon and kite construction paper in assorted colors.

NX751934 (100 sheets)—\$12.95

NX753749 (480 sheets)—\$59



Glue Stick

NX751913—\$1

10 or more—\$.90 each

100 or more—\$.85 each



education

Parachutes

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A
\$99.90
value!

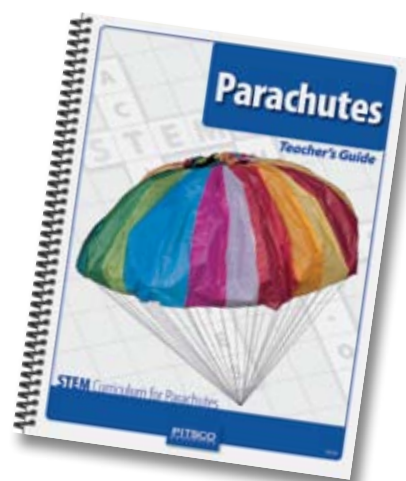
Parachutes – Getting Started Package

Build and deploy parachutes with a variety of payloads and watch the excitement. This Getting Started package includes materials for 30 student parachutes and the *Dr. Zoon Parachutes Video*. Requires scissors, sold separately.

The *Parachutes – GS Package* includes the following products:

- ChutePak II
- Rip Cord Parachute Drop
- Dr. Zoon Parachutes Video (DVD)

NX723659 Parachutes – Getting Started Package—\$89
Middle School-High School

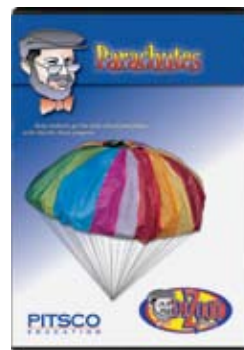


Parachutes Teacher's Guide

Parachuting has both a fun and functional side. This guide pulls the rip cord of possibilities by showing you and your students how to build and test parachutes to learn about acceleration, speed, velocity, load, gravity, area, and a bundle of calculations. Paperback/spiral-bound, 116 pages.

Level: Middle School-High School

NX759730—\$24.95



Dr. Zoon Parachutes Video

Watch as Dr. Zoon constructs a parachute from tissue paper and tests its performance. Plus, he'll explain some of the connected principles. Use this or similar designs for parachutes on bottle rockets to help them stay in the air as long as possible! Closed-captioned. Time: 17 minutes.

Level: Middle School-High School

NX759784 DVD—\$24.95



Rip Cord Parachute Drop

Get the drop on parachute activities – the *Rip Cord* makes it easy to test student-built parachutes without repeated trips up a ladder!

Build the device by following assembly instructions and mount the *Rip Cord* from a gym ceiling, classroom suspended ceiling, rim of a basketball hoop, or a 13' aluminum stand (sold separately). Then, attach the parachute on the chute grip and pull the string until it reaches the bumper where it is automatically released!

Includes the parts and hardware to build the *Rip Cord* and 100 feet of twine.

NX732863—\$29.95

NX732894 Rip Cord Stand, 13'—\$155

ChutePak II

Pitsco's *ChutePak II* contains materials for students to explore the principles governing the design and use of parachutes. Tissue paper, glue sticks, and all other necessary materials are included for 30 students. Requires scissors, sold separately.

Level: Middle School-High School

NX723735—\$45





Numbers and Mosaics Set

With loads of number and sign tiles, this big set is the perfect way to start exploring early math concepts such as addition, subtraction, and counting. The set also encourages number recognition, sorting, sequencing, and learning mathematical symbols and concepts. The mosaic tiles enable your students to learn about symmetry, shapes, colors, and sequences. Comes with blue storage container, activity guide, and four white building plates. Ages 3+.

NX779531—\$121.95



Letters Set

This updated set now has more elements to help your students learn the sounds of letters as well as their lowercase and capital forms in a hands-on way. Also helps with other basic language, reading, and motor skills. Ages 3+.

NX779530—\$70.95



City Buildings Set

This set enables children to design and build their own real-life city environment with houses, a supermarket, a post office, and much more. It is ideal for investigating and acting out familiar patterns of city life. Includes fun elements such as a skateboard, Popsicles, and croissants, as well as minifigures and four double-sided inspiration cards with model and building ideas. Ages 4+.

NX779311—\$101.95



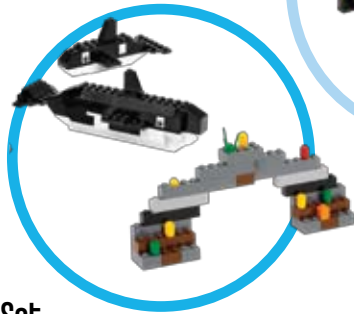
Space and Airport Set

With this set, children can investigate topics such as travel, air-traffic control, space, aliens, and communicating with others. It includes elements for building a space shuttle, airplanes, satellites, and much more. Minifigures and five illustrated inspiration cards provide model and building ideas. Ages 4+.

NX779335—\$131.95



See page 1 for more information.



Animals Set

With this set, children can learn all about animals and their different habitats. It provides opportunities to build animals within four different themes: desert, farm, underwater, and prehistoric. Also includes five double-sided inspiration cards with model and building ideas for each theme. Ages 4+.

NX779334—\$101.95



Rescue Services Set

The *Rescue Services Set* includes enough elements to build police and fire stations, a hospital, and all the vehicles required to help. This set is ideal for exploring emotions related to people who are in need, in danger, and committing crimes. Includes minifigures and four double-sided inspiration cards packed with model and building ideas. For ages 4+.

NX779314—\$141.95



Vehicles Set

A set for exploring a variety of vehicles, their functions, and how they help keep the community on the move. Build a bus, garbage truck, front loader, or ice cream truck and keep the community people busy! Features minifigures and five double-sided inspiration cards packed with model and building ideas. Ages 4+.

NX779333—\$101.95



Fairytale and Historic MiniFigure Set

This set features a variety of minifigures that enable children to create and act out beloved fairy tales and popular themes. Includes pirates, a witch and wizard, a king and queen, mine workers, a mermaid and merman, and many more. Ages 4+.

NX779349—\$49.95



Community MiniFigure Set

Add even more life to your bustling LEGO® town! This set features indispensable people from everyday life in a community, such as a postman, hospital staff, a mechanic, and many more. Includes 22 minifigures plus a variety of accessories, such as food, animals, a laptop, a bicycle, and a backpack! Ages 4+.

NX779348—\$49.95



See page 1 for more information.



Harbor Set



906

Use this set to dive deep into life on the harbor and let children investigate a variety of topics, such as different types of ships, loading and unloading cargo, and the purpose of a lighthouse. The set provides four themes that can be built at the same time: industrial harbor, beach life, harbor shops, and shipyard. It features four 2.5" x 2.5" and five 2.5" x 5" building plates for stable model building. Also includes five inspiration cards with model and building ideas for each theme. Ages 4+.

NX779337—\$121.95



DUPLO® Large Bulk Set

144

There's a whole world of possibility open to your students when they get their hands on the DUPLO® Large Bulk Set. This set is excellent on its own or as a supplement to other DUPLO sets and features 144 elements, including nonstandard bricks with eyes, wings, and more. Your students will find unlimited building potential while at the same time improving spatial intelligence and expressive language skills. Ages 18 months+.

Colors of LEGO® elements may change.

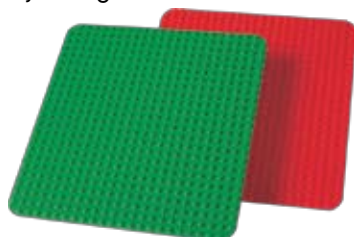
NX779027—\$43.95



DUPLO® Building Plates

Two large 38 cm x 38 cm (15" x 15") LEGO® DUPLO® stud building plates provide the perfect foundation for a preschooler's creativity. Ages 4+.

NX779071—\$25.95



Wheels Set



286

Combine this set with standard LEGO® bricks and let children build all sorts of vehicles and add mobility to their constructions. The set includes tires in four different sizes along with plates, axles, and wheel hubs to make sets of wheels and vehicle chassis for up to 12 different vehicles at the same time. Ages 4+.

NX779387—\$39.95

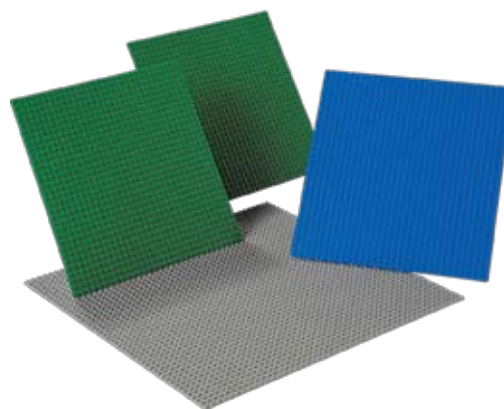


884

LEGO® Bricks Set

This set is perfect for creative play or adding to your existing LEGO® sets. Includes nine fun colors in 11 different sizes. Ages 4+.

NX779384—\$49.95



Large Building Plates Set

Children need a foundation on which to build, and each durable baseplate forms a solid base for all LEGO® building bricks.

Includes one gray baseplate (38 cm x 38 cm), two green baseplates (25 cm x 25 cm), and one blue baseplate (25 cm x 25 cm). Ages 8+.

NX779286—\$29.95



CHOKING HAZARD! See page 1 for more information.

For more Building Plate Options visit us online at LEGOeducation.us.



education

Storage



Small Parts Storage Cabinets

These sturdy storage cabinets are perfect for small LEGO® parts. In fact, they are the exact cabinets used by the LEGO Education customer service department! The cabinets stack securely or can be mounted to the wall using handy pre-cut keyhole slots. The drawers of the cabinets are transparent and dividable, which makes part identification and organization a snap. The drawers also feature finger-grip pulls for easy access and rear-stop tabs to prevent the drawers from falling out and spilling the contents. The 64-drawer unit provides excellent small parts storage.

NX991186 64-Drawer Cabinet (Overall dimensions: 20" x 15" x 6".

Drawer size: 2" x 1-1/2" x 5-1/2".)—\$35

NX991185 44-Drawer Cabinet (Overall dimensions: 20" x 16" x 6".

Drawer sizes: Smaller drawers are 2" x 1-1/2" x 5-1/2".

Larger drawers are 4-3/8" x 2" x 5 1/2".)—\$35



X-Large Blue Storage Bin

This stackable large bin is great for most LEGO® Education sets. The transparent lid snaps into place and stays put. Bin measures 16.5" x 12" x 10".

NX209840—\$18

NX779840 (set of 6)—\$99.95

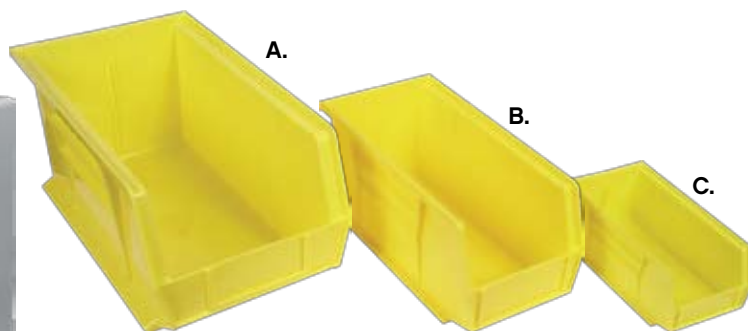


Medium Storage Bin

A smaller version of the X-Large Storage Bin, this medium bin measures 16.5" x 12" x 6".

NX779001 Blue—\$9

NX991319 Gray—\$9



Stackable Storage Bin

These sturdy plastic storage bins will come in handy in any classroom, especially one with thousands of small LEGO® parts. Use for separating bricks by color or shape or for storing items like battery boxes, leads, batteries, *NXT Intelligent Bricks*, and tires. The bins' sturdy one-piece construction is rust- and corrosion-proof, so your stored items will be safe for years. The bins stack securely atop each other and store on shelves, carts, or under tables. Molded from high-density polypropylene, the bins are resistant to weak acids and alkalis. Available in three sizes, yellow only.

A. NX991138 (14-3/4" x 8-1/4" x 7")—\$13

B. NX991137 (10-7/8" x 5-1/2" x 5")—\$7

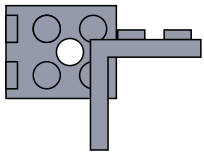
C. NX991136 (7-3/8" x 4-1/8" x 3")—\$3



Heavy-Duty Utility Cart

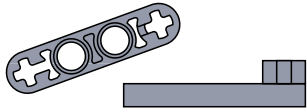
Do you ever find yourself trying to move stacks of LEGO® Education sets from one classroom to another, afraid you'll drop a set and lose its contents in the hallway? Or have you ever thought about making your LEGO curriculum more mobile, able to be shared with other teachers and students in other disciplines? Then this cart is perfect for you! Stack all of your sets, activity packs, extra parts, books, and other storage bins on this Rubbermaid cart, and your worries will be over. With heavy-duty casters and four-inch lips around both shelves, the contents of the cart stay securely in place. Roll it from one classroom to another, from a classroom to the gym for after-school projects, or simply use it in your classroom as a storage and distribution aid. The cart measures 17-7/8" x 39-1/4" x 33".

NX991176—\$175.95



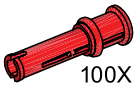
2 x 2 Angle Plate

NX970036 (gray, 25 pcs)—\$10



Lift Arm

NX970030 (gray, 50 pcs)—\$10



100X

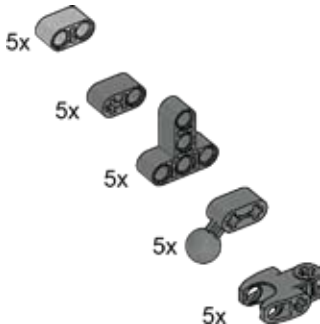
2M Friction Snap with Cross Hole

NX991337—\$10



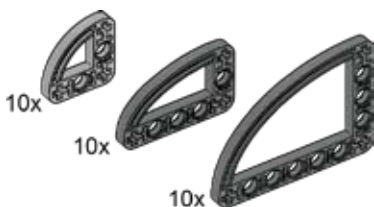
Large Tire and Hub

NX970047 (pkg of 2 tires, 2 hubs)—\$10



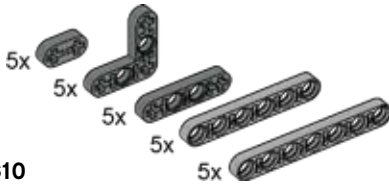
Technic Specialty Beams

NX970133—\$12



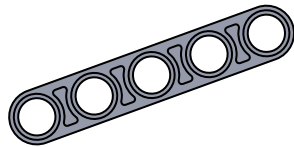
Half Beams with Curve

NX970129—\$12



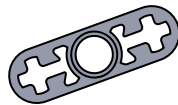
Levers and Half Beams

NX970132—\$12



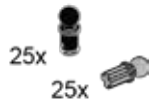
Small Half Beam

NX970043 (gray, 100 pcs)—\$10



Lever Arm

NX970039 (gray, 50 pcs)—\$10



Specialty Connector Pegs

NX970130—\$10



100x

Connector Pegs with Friction 3M - Blue

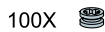
NX970131—\$10



100X

1 x 2 Plates with Slides

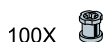
NX970600—\$10



100X

1/2 Bushings

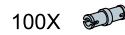
NX970601—\$10



100X

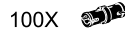
Bushings

NX970602—\$10



Connector Pegs

NX970603—\$10



Connector Pegs with Friction

NX970604—\$10



Connector Pegs with Friction 3M - Black

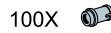
NX970605—\$10



100X

Connector Pegs with Cross Axles

NX970606—\$10



100X

Connector Pegs with Knobs

NX970607—\$10



100X

Connector Pegs 1-1/2M

NX970608—\$10



100X

2M Cross Axles with Grooves

NX970609—\$10



100X

3M Cross Axles

NX970610—\$10



50X

Axle Extenders

NX970618—\$10



50X

Catches

NX970619—\$10

Spare Parts



4M Cross Axles

NX970612—\$10



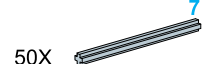
5M Cross Axles

NX970613—\$10



6M Cross Axles

NX970614—\$10



7M Cross Axles

NX991329—\$10



8M Cross Axles

NX970615—\$10



10M Cross Axles

NX970616—\$10



12M Cross Axles

NX970617—\$10



100X

Cross Axles with Knobs

NX970611—\$10



50x

5.5 Cross Axles

NX970127—\$10



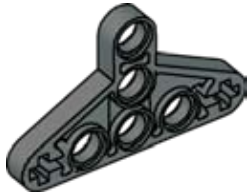
50x

9M Cross Axles

NX970128—\$10



25X
Cam Wheel
NX991333—\$10



25X
Technic Triangle
NX991332—\$10

100X 
8-Tooth Spur Gears
NX970620—\$10

50X 
12-Tooth Conical Wheels
NX970621—\$10

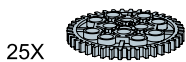
50X 
16-Tooth Gears
NX970622—\$10

25X 
20-Tooth Double Conical Wheels
NX970623—\$10

25X 
12-Tooth Black Double Conical Wheels
NX991327—\$10

50X 
24-Tooth Crown Gears
NX970624—\$10

50X 
24-Tooth Gears
NX970625—\$10



25X
40-Tooth Gears
NX970627—\$10



50X
Cross Blocks
NX970628—\$10



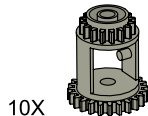
50X
Catches with Cross Holes
NX970629—\$10



2x
Air Storage Tanks
NX970125—\$15



50X
2 x 2 Skid Plates
NX970639—\$10



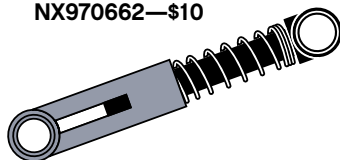
10X
Gear Casings
NX970641—\$10



25X 
O-Ring and Pulley Wheels
NX970660—\$10



25X
Steering Wheels
NX970662—\$10



Shock Absorber
NX970028 (gray/black, 10 pcs)—\$10



10X
Pulleys
NX970630—\$10



50X
Bricks with Cross Holes
NX970631—\$10



50X
1 x 2 Technic Bricks
NX970632—\$10



30X
1 x 4 Technic Bricks
NX970633—\$10



30X
1 x 6 Technic Bricks
NX970634—\$10



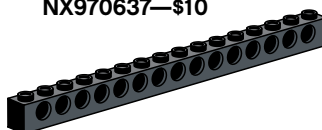
20X
1 x 8 Technic Bricks
NX970635—\$10



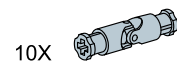
20X
1 x 10 Technic Bricks
NX970636—\$10



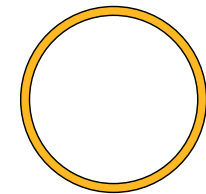
10X
1 x 12 Technic Bricks
NX970637—\$10



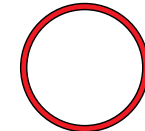
10X
1 x 16 Technic Bricks
NX970638—\$10



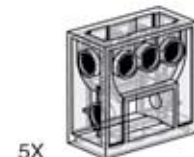
10X
Universal Joints
NX970665—\$10



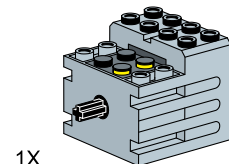
Yellow Band
NX970004—\$10



Red Band
NX970121—\$10



5X
Gear Blocks
NX970646—\$10

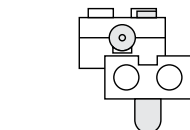


1X
9-Volt Motor with Gear Reduction

Motors may vary in color.

NX775225—\$17.95

LIMITED QUANTITY



1 x 2 Lamp Brick 9V
NX970005 (white, 2 pcs)—\$10



2X
Turntables
NX991330—\$12



5X



5X



5X



5X



5X



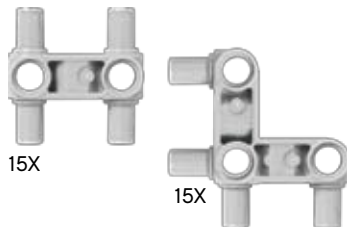
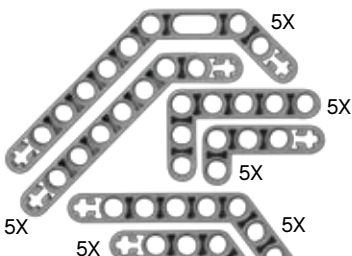
5X



5X

Studless Technic Beams

NX991402—\$12



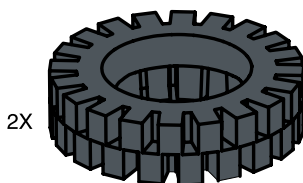
Technic Beams with Snaps

NX991404—\$12



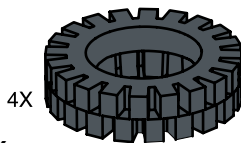
Technic Angle Beams

NX991403—\$12



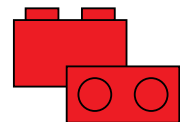
Technic Cross Blocks

NX991405—\$12



Tire Pack

NX970113—\$10



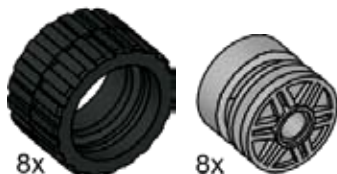
1 x 2 Red Bricks

NX970008 (50 pcs)—\$10



1 x 2 Blue Plates

NX970009 (100 pcs)—\$10



Small Wide Tire & Hub

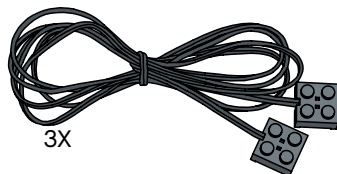
NX991331—\$10



Track and Sprockets Pack

NX991369—\$12

Colors and decorative designs may vary.



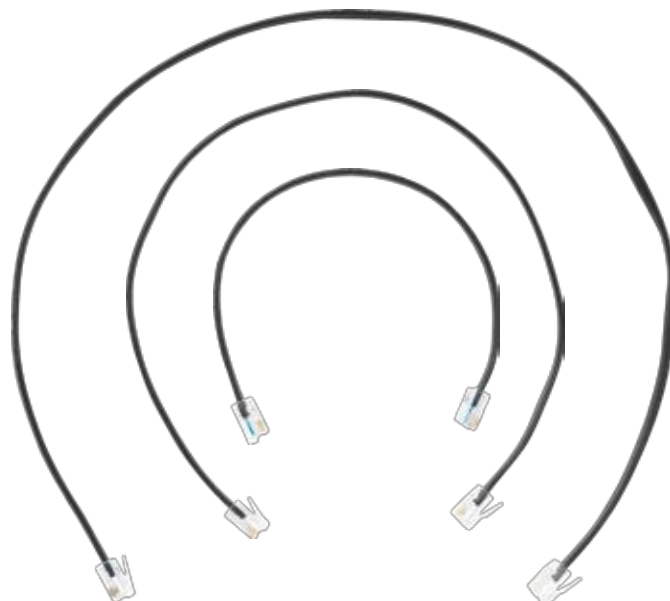
1,280 MM Connecting Leads

NX970115—\$10



128 MM Connecting Leads

NX970041—\$10



NXT Connector Cables

Use this cable pack to supplement your cable selection. Includes one .2M cable, two .5M cables, and four .35M cables.

NX991781—\$10

NXT Extended Connector Cables Set

This set contains one each of the following lengths:

- 12 cm (4.75") – extra short
- 16 cm (6.3") – short
- 70 cm (27.6") – long
- 90 cm (35.4") – extra long

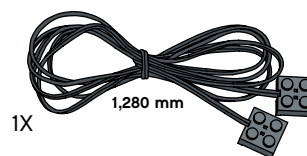
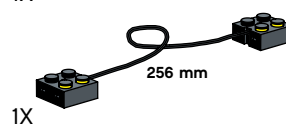
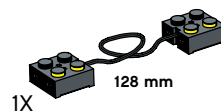
NX991534—\$6.50



NXT Conversion Cable

With this cable, you can use your legacy RCX sensors and motors with the NXT Intelligent Brick! Three of these cables are also included in the 979797 LEGO® MINDSTORMS® Education NXT Base Set.

NX770323 (pkg of 3)—\$10



Bobbins

NX970643—\$10



Chain Links

NX970645—\$10



Conveyor Belt Links

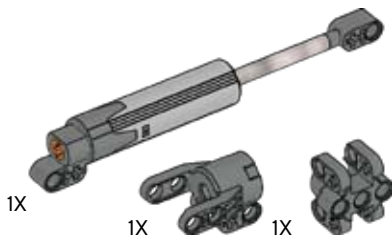
NX779938—\$10



Pneumatics Parts Pack 
NX770900—\$25



Pneumatic T-Pieces
NX970110—\$10



Linear Actuators
NX970124—\$15



Pneumatic Switch
NX970663—\$10



Hex Keys

This set comes with all four sizes of Hex Keys needed for TETRIX® hex pieces. Includes one each of 7/64", 3/32", 1/16", and 5/64" keys. Ages 14+.

NX739104—\$9.95



DC Charger

Recharge your battery! This standard 10V DC transformer plugs into an AC outlet to recharge your *Rechargeable DC Battery* (979693) for the *NXT Intelligent Brick* or your *Power Functions Rechargeable Battery Box* (778878), sold separately. Ages 7+.

NX778887—\$24.99



Heavy-Duty Tubing Cutter

Heavy-duty tubing cutter for cutting the 5/8" diameter structural tubing for TETRIX® robots. The all-metal construction of this cutter makes it easy to cut tubing lengths precisely and with ease. The cutting diameter range is 3/16"-7/8".

NX734724—\$34.95



Hook-and-Loop Fastener

Great for a multitude of applications! One 10-foot strip of each material. 3/4" wide.

NX751974—\$22.95



Cable Ties

Tube of 500 colorful cable ties for a variety of projects at school, home, work, or in the yard. Ties come in a variety of lengths from 4" to 8" and include a screw-on lid for secure storage.

NX758335—\$14.95



Wide Rubber Bands

Approximately 1/2" width x 2" length.
NX756136 (pkg of 50)—\$1.95



Permatex Super Lube

This synthetic lube contains Syncon, the slipperiest surface known to humankind, so it's great for keeping robot gears running without a hitch.

NX720821—\$6.95



Multi Nut Pliers

Designed to hold nuts while bolts are tightened. The long, narrow neck reaches into tight places. Great for building TETRIX® robots. Ages 14+.

NX739130—\$21.95



X300 SaFety Glasses

Finally, safety glasses that make eye protection look cool. These lightweight, anti-scratch glasses offer a sleek design while providing impact strength, optical clarity, and 99.9% UV protection. Meets ANSI Z87.1-2003 and ANSI + High Impact Standards.

NX734192 Smoke—\$1.95

NX734189 Amber—\$1.95

NX734191 Mirrored—\$1.95

NX734190 Clear—\$1.95

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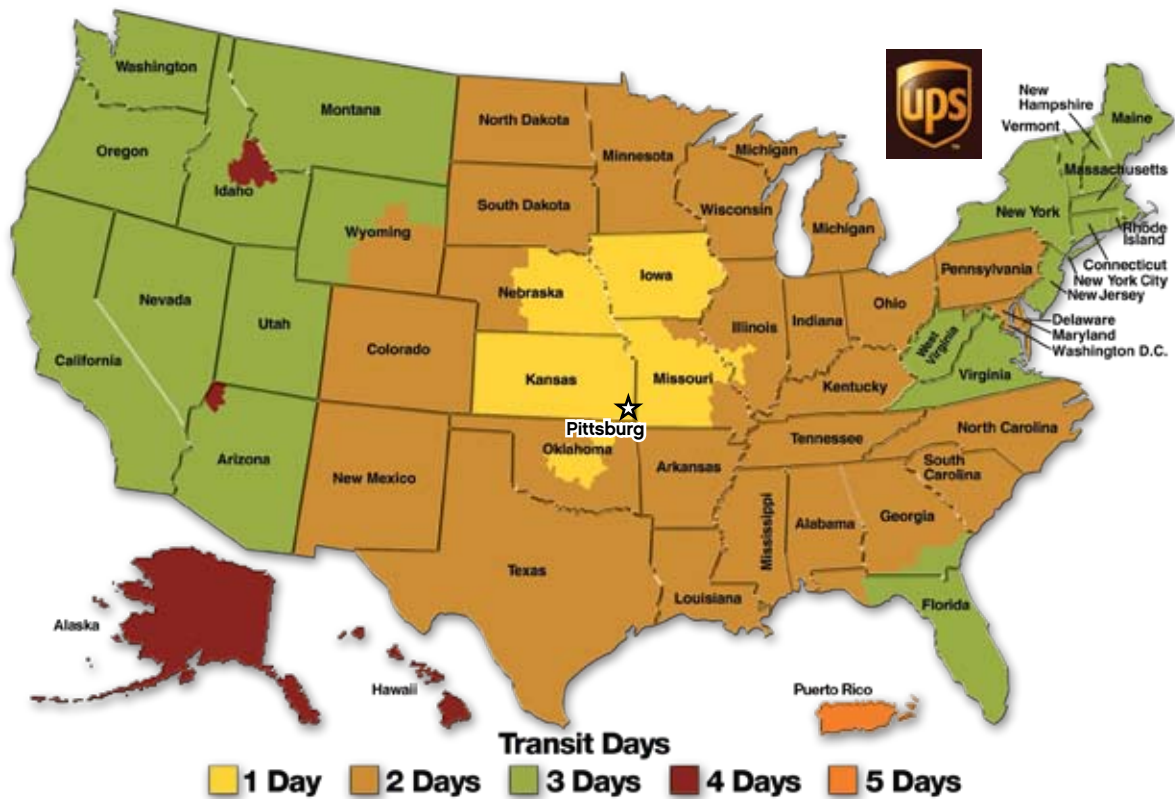
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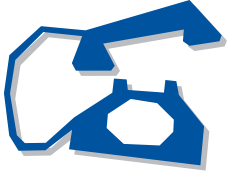
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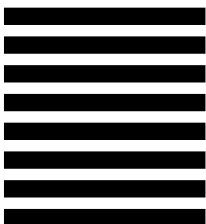
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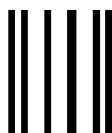
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